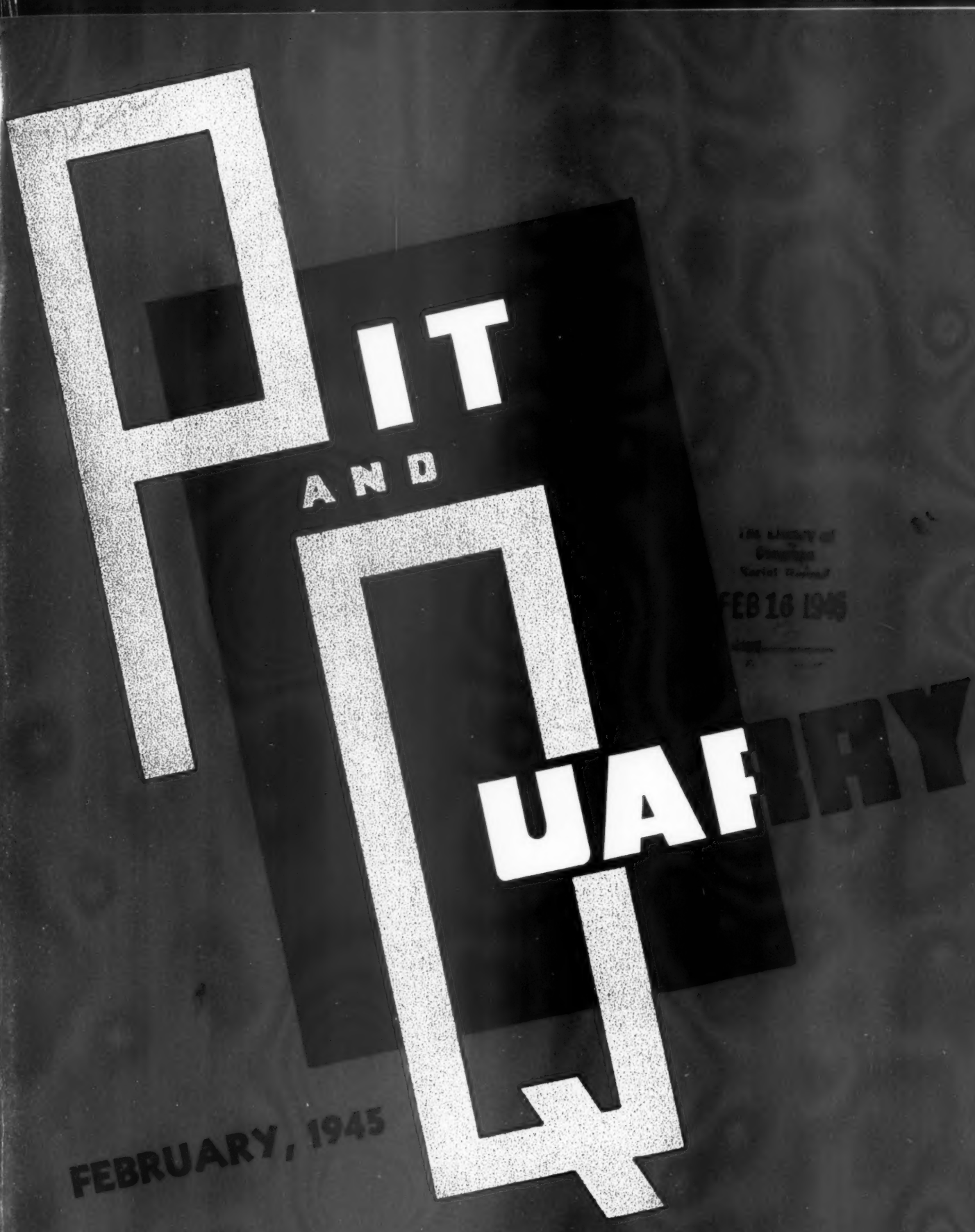
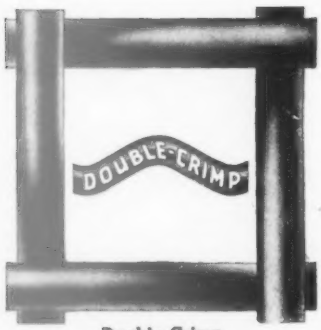


FEB 16 1945

TOTAL NET PAID CIRCULATION NOW AT NEW ALL-TIME PEAK — OVER 7,500

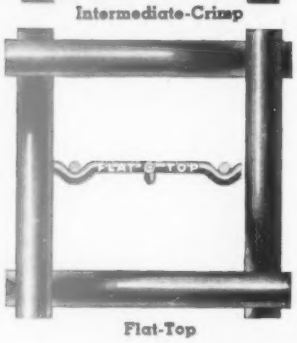
FOR 28 YEARS THE LARGEST PRODUCER CIRCULATION IN THE FIELD



Double-Crimp

Arch-Crimp

Intermediate-Crimp



Flat-Top

"The Perfect"

Wire Cloths and Screens

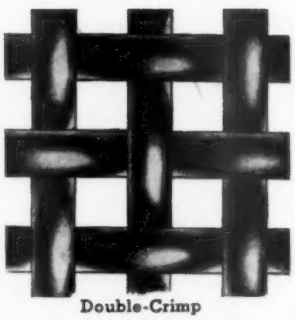
We have been specialists for many years in the making of precision wire cloths, wire screens and woven wire products.

We apply our same precision principles in fabricating wire cloths into finished industrial units, for production or processing equipments or for permanent parts of countless industrial products.

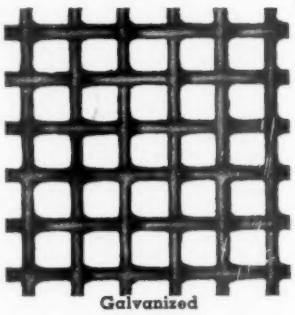
We invite your inquiries for wire cloths of all commercial metals or alloys or weaves, in continuous lengths or cut to size, or processed to meet your individual requirements.

"Perfect" alloys and metals	"Perfect" Wire Cloth weaves	"Perfect" Wire Cloth Processing	"Perfect" Wire Cloth products
Super-Loy	Arch-Crimp	Bending	Baskets
Steel	Coiled	Binding	Circles
Galvanized	Double-Crimp	Brazing	Cones
Tinned	Double-Fill	Calendering	Crates
Stainless Steel	Dutch	Clinching	Cylinders
Nickel-Chromium alloys	Filter	Cutting	Discs
Aluminum	Flat-Top	Dipping	Forms
Brass	Herringbone-Twill	Dishing	Leaves
Bronze	Intermediate-crimp	Flanging	Lengths
Commercial Phosphor	Rek-Tang	Flattening	Panels
Copper	Selvage-Edge	Forming	Pieces
Monel Metal	Straight-Warp	Framing	Racks
Nickel	Stranded	Galvanizing	Ribbons
Any special alloys available in rod or wire form	Sta-Tru	Painting	Rolls
	Triple-Warp	Shearing	Sections
	Twilled	Slitting	Segments
	Twisted-Fill	Trimming	Spaces
	Twisted-Warp	Arc-Welding	Strips
		Gas-Welding	Template shapes
		Spot-Welding	Trays

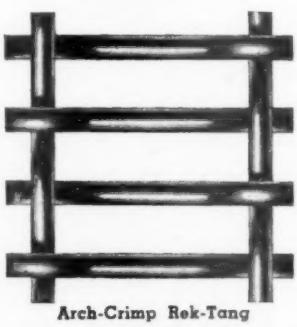
We will follow your specifications and blue-prints exactly as your production engineers have prepared them—or we will submit suggestions for your approval.



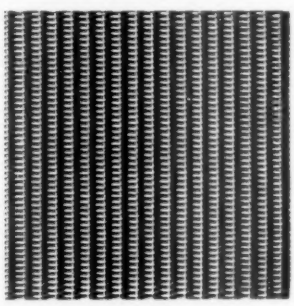
Double-Crimp



Galvanized

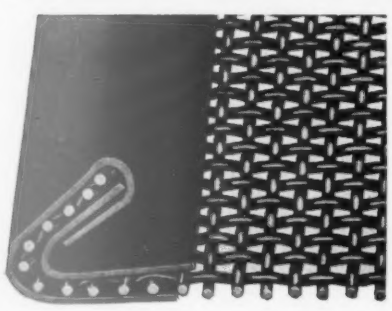


Arch-Crimp Rek-Tang



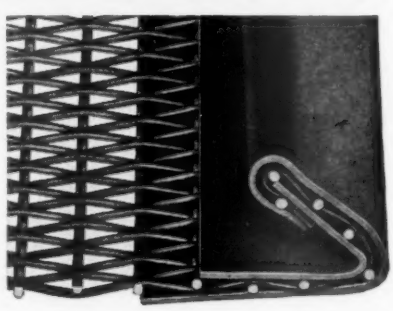
Dutch Weave

Sta-Tru



LUDLOW-SAYLOR PRECISION FABRICATING makes vibrating-screen decks and jackets that are easily handled — quickly installed — need fewer adjustments and renewals.

Illustrations suggest only a few of the many available types of wire cloths and woven wire screens, which may be custom-finished with attachments to fit your particular processing installations.



Efficient, High-Capacity Handling with LINK-BELT BELT CONVEYORS

YOU can be assured of maximum belt life, minimum power and maintenance cost, and dependable trouble-free service with Link-Belt Anti-Friction Belt Conveyor Idlers and other equipment.

Link-Belt engineers pioneered in the development of anti-friction belt conveyor idlers and have consistently improved the original, fundamental design—the grease seal, bearing adjustment, shaft mounting and the supporting stands and brackets. All with the result that today's Link-Belt designs offer the very best in belt conveyor equipment to keep production "On the Move" for Victory.

36" wide belt conveyor equipped with Link-Belt type "70" troughing idlers and type "71" return idlers, handling mine run ore from mine ore bin to vibrating grizzly and picking belt at the rate of 100 T.P.H. Conveyor is operated by a Link-Belt Motorized Speed Reducer and Silverlink Roller Chain Drive.

LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Toronto 8. Offices, warehouses and distributors in principal cities.

9665E

LINK-BELT

THE SYMBOL OF QUALITY — LINK-BELT COMPANY

BELT CONVEYOR EQUIPMENT

IDLERS • TRIPPERS • BELTS • PULLEYS • BEARINGS • DRIVES

OTHER LINK-BELT EQUIPMENT INCLUDES: Complete Sand, Gravel and Stone Washing Plants . . . Ready-Mixed Concrete Plant Equipment . . . Lime Handling Equipment . . . Screens (vibrating, rotary and conical) . . . Washers and Classifiers of the screw, log flight, Shaw and conical types . . . Dewatering Rotoscoops and Screw Conveyors . . . All Types of Elevators and Conveyors . . . Roto-Louvre Dryers and Coolers . . . Skip Hoists . . . Car Spotters . . . Portable Conveyors and Bucket Loaders . . . Silent and Roller Chain Drives . . . Speed Reducers . . . Variable Speed Transmissions . . . Chains (Malleable Iron, Promal and Steel) . . . Sprockets . . . Elevator Buckets . . . Gears . . . Clutches . . . Couplings . . . Self-Aligning Ball and Roller Bearing Units . . . Babbitted Bearing Units, etc. Catalogs on request.

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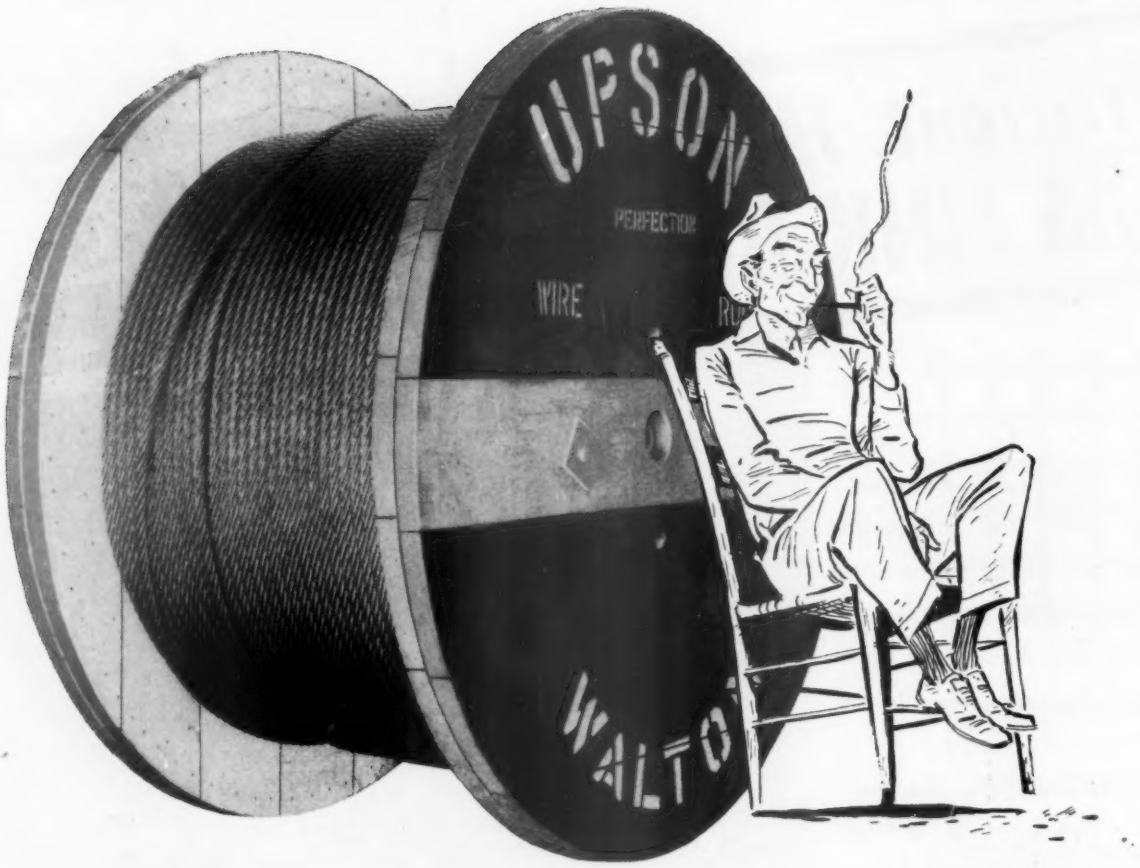

GOOD WIRE ROPE, LIKE GOOD TOBACCO, SHOULD BE MELLOW

Thoroughly "Mellowed" Wire makes Upson-Walton Wire Rope give Better Service

ADD a word to your buying vocabulary and you'll add dollars to the value you get in wire rope.

To the younger generation "mellow" means "perfect, wonderful, exceptionally fine". To a metallurgist talking about wire for rope, "mellow" means all that and more—a "mellow" wire has a valuable combination of physical properties that add up to better, longer lasting wire rope.

"Mellow" wire in U-W Perfection ropes has high tensile strength, it has maximum toughness and extraordinary resistance to abrasion, yet remains extremely ductile and is free from internal stresses and strains and (most important quality rope can have) has extraordinary *resistance to work fatigue.*

These are important qualities to you as a buyer. A generation of making wire rope for thousands of users has taught Upson-Walton how to specify and select wire and then fabricate it into rope which keeps all its finest qualities, all these important properties.

All wire rope may look alike when new; rope made from mellow wire keeps on "looking new" and serving the user long after other rope is worn out and gone. It pays in dollars and in longer trouble-free service to specify *Upson-Walton.*

U-W

ESTABLISHED 1871

THE UPSON-WALTON COMPANY

Manufacturers of Wire Rope, Wire Rope Fittings, Tackle Blocks

NEW YORK • PITTSBURGH • CLEVELAND • BUFFALO • CHICAGO

Build better MOUNTAIN ROADS

with AGGREGATE *from a* CEDARAPIDS MASTER TANDEM

When the ban on building general highways is lifted, you will get your opportunity to help build postwar prosperity. Then a Cedarapids plant that is flexible enough to meet so many requirements will put you in the most favorable position for bidding on contracts. Take the Master Tandem, for instance, with its maximum production of uniform, graded products which can economically meet a variety of modern specifications. It delivers greater tonnage in less time, with more hours of trouble-free operation and at less cost, because it has ALL the features to meet these requirements. In the Master Tandem, Cedarapids again demonstrates its leadership in the aggregate and asphalt plant equipment industry.

IOWA MANUFACTURING COMPANY
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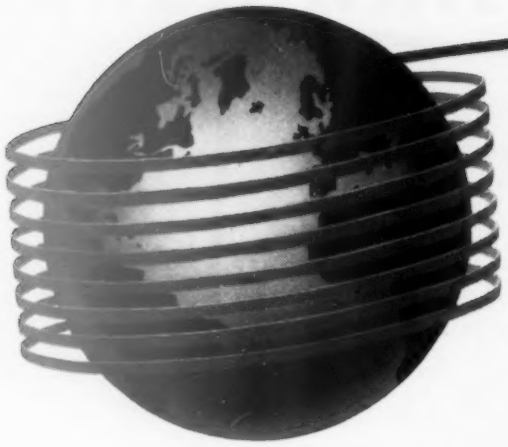
TRACTOR-CRUSHER PLANTS
STEEL TRUCKS AND TRAILERS
KUBIT IMPACT BREAKERS



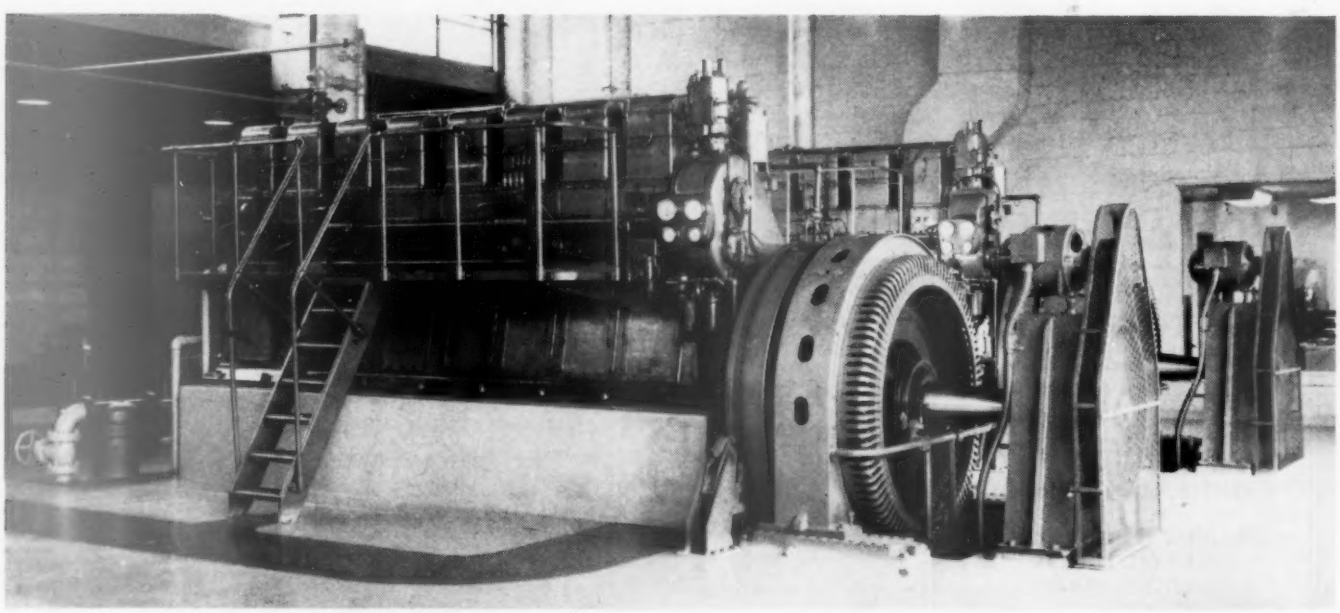
Eight times Around the World Non-Stop!

THE two 8-cylinder Cooper-Bessemer Diesels shown below have been in constant operation for 17,000 hours. Thus piston travel alone, in each of the sixteen cylinders, exceeds the equivalent of a non-stop trip eight times around the earth!

Seems incredible, especially when you consider all the allied engine parts such as rings, liners, bearings, pins and valves. Still there is no evidence whatever that any repair or maintenance is needed — and there never has been! Since standby engines were unobtainable despite greatly increased power demand, such dependability has been welcome, indeed.

This case history is not intended to discourage planned or pre-timed maintenance, but it does provide further evidence that exceptional stamina, unusual resistance to wear, and prolonged efficiency are Cooper-Bessemer engineering accomplishments — advantages that are downright life-savers in an emergency . . . certain in any case to protect the profit side of your ledger.

Cooper-Bessemer welcomes the chance to cooperate with you or with your consulting engineers in determining the correct engines for your requirements . . . stationary or mobile, on land, at sea, or on the rails.



These two Cooper-Bessemer engines, Type JS 8-cylinder 600 hp diesels, are installed in the R.E.A. Tri-County Electric Cooperative at Portland, Michigan. Under the supervision of Mr. S. Don King, Superintendent, they have piled up 17,000 continuous operating hours without repair and with no indication that any maintenance whatever is needed.

THE Cooper-Bessemer CORPORATION

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on the tailings | hard digging | removing overburden | feeding the grizzly

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INVESTIGATE THIS COMPLETE

Here's important help for contractors: A complete lubrication service that's geared to meet the needs of your fast-moving business! Finest lubricants—time-saving engineering and maintenance aids quickly and conveniently available from one source. Read the details *NOW!*

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CONTRACTORS' SERVICE!

*Contract Dates

THIS SERVICE is designed to *save time for you*—out on the job, in the maintenance department—all through your operation!

Here are a few of the advantages Socony-Vacuum experience and resources bring you!

Our complete line of top-flight products means you get exactly the right oil or grease for every application—more efficient protection without special orders, extra bookkeeping.

We have the facilities to bring you scheduled deliveries *right on the job*. This reduces interruptions—and inventory problems.

The Socony-Vacuum Representative is always ready to work *with* your men—to explain where, when and *how* each machine should be lubricated—to supply tested, time-saving maintenance ideas and schedules—to help plan special schedules to fit your specific needs. And he can, when necessary, call in Socony-Vacuum engineers to help with "problem" equipment.

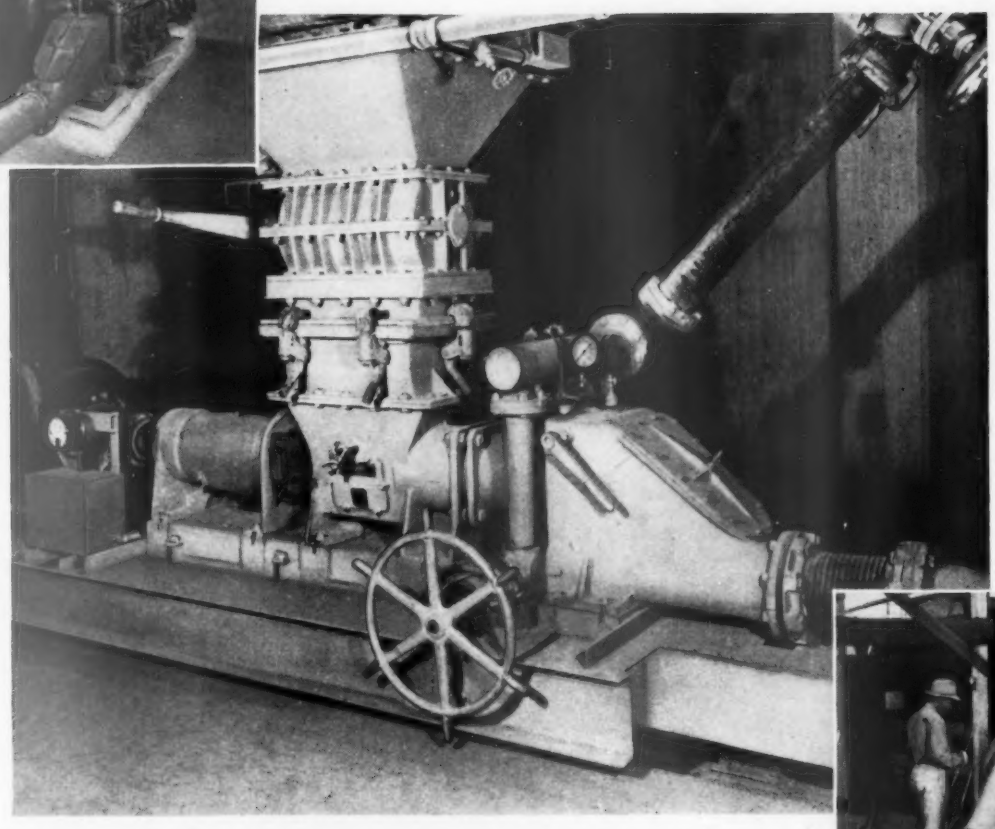
When you buy from Socony-Vacuum, you get not merely fuels and lubricants—but *complete on-the-job service!* Call in our representative today.

"ON YOUR STAFF—BUT NOT ON YOUR PAYROLL"—

Your Socony-Vacuum Representative

CORRECT LUBRICATION FOR EVERY PART OF EVERY MACHINE YOU OPERATE . . .
PLUS
1 ENGINEERING HELP on time-losing operating problems; 2 TESTED MAINTENANCE SCHEDULES that minimize service man-hours—keep equipment on the job; 3 PROMPT, DEPENDABLE DELIVERY—a reliable, on-the-job service that eliminates inventory problems for you!

Fuller-Kinyon *Pumps*



Safe, Clean, Low-Cost Conveying

When your problem is conveying dry pulverized materials, your money can't buy a better system than Fuller-Kinyon. Built in various types and for various capacities. There's the stationary type for conveying from pulverizers, bins, collector screws and hopper-bottom cars. Portable for conveying from silos. Remote-Control Unloader for unloading from box cars, ships, barges and flat-bottom storage bins.

Systems have been installed for capacities of a few tons per hour to 300 tons per hour . . . distances to 5000 feet; elevations to 500 feet. The system however is not limited to this distance.

Installation involves no interference with normal plant production or layout, pipe lines for conveying being installed underground or carried on simple hangers overhead.

P-72

FULLER EQUIPMENT

Fuller-Kinyon Conveying Systems
Fuller-Fluxo Conveying System
The Airveyor Conveying System
Rotary Compressors and Vacuum Pumps
Air-Quenching Inclined-Grate Coolers
Dry Pulverized-Material Coolers
Rotary Feeders and Gate Valves
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NO OTHER V-BELT CAN MATCH THESE RECORDS!

NOW you can see advance proof that Goodyear's great steel-cable V-Belt will save real money on your toughest drives that "eat up" ordinary belts. It's the performance data on more than 2,000 test sets of this super-tough belt on all types of drives—compiled by the G.T.M. (Goodyear Technical Man) for your information.

In it you'll see evidence that the Goodyear steel-cable V-Belt is successfully operating at belt speeds as slow as 38 F.P.M.—and as fast as 9,400 F.P.M. That it can be used in place of chain-drives, gears or flat belts, in some applications, with far greater efficiency. That it long outlasts conventional belts—that it doesn't stretch—that it withstands heat, shock loads and other severe operating hazards far better. That it gives superior service at lowest ultimate cost!

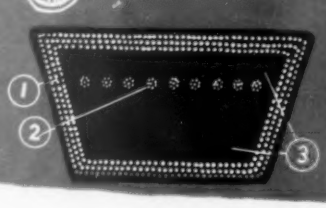
Those are just a few of the reasons why more than *TWO MILLION* of these revolutionary belts are now giving standout service on "killer" drives—both in war plants and on military equipment. Once you have tried them, you will want them on every tough V-drive. To bring the G.T.M. to your office with these convincing records, write Goodyear, Akron 16, Ohio, or Los Angeles 54, California—or phone the nearest Goodyear Industrial Rubber Products Distributor.

E.C. Cord—T.M. The Goodyear Tire & Rubber Company

ASK YOUR G.T.M. TO SHOW YOU THIS SERVICE DATA BOOK ON GOODYEAR STEEL-CABLE V-BELTS

GOODYEAR INDUSTRIAL RUBBER PRODUCTS

GTM -Specified STEEL-CABLE V-BELT for Multi-V drives



1. Heavy, super-tough black cover with uniform friction, longer life
2. Load-carrying, endless, steel cables in neutral plane
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THE GREATEST NAME IN RUBBER

P.S. For longest wear in cotton cord V-belts, specify Goodyear E.C. Cord Belts.

LOWER COSTS and a More Salable Product with TELSMITH

● The Hartland Sand & Gravel Co. of Hartland, Wis., is always on the alert to cut costs. Primary and secondary crushers of various makes were tried . . . without getting satisfactory economy. Then they got Telsmith Crushers—and results! Producing more aggregate in 8 months of 1944 than in all of 1943, all crusher trouble was eliminated.

When the 36″ Telsmith Gyrasphere Secondary Crusher replaced a 40 x 24 roll crusher and a reduction crusher—only half as much power was required. And not only was production increased but the product was better suited to the market.

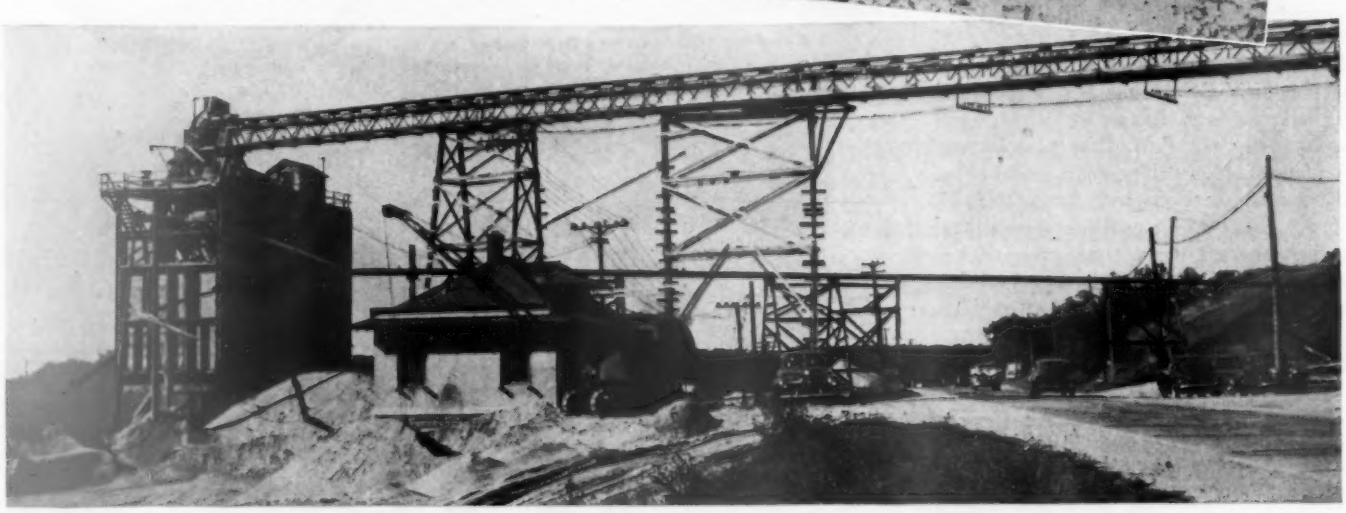
The plant's present output is about 130 tons of aggregate per hour, which runs approximately 60% rock and 40% sand. Three sizes of gravel and one size of stone chips, and mason and concrete sand are produced.

In addition to the No. 36 Telsmith Gyrasphere Secondary Crusher (*right*) other Telsmith equipment includes: 24″ Reciprocating Plate Feeder, Bar Grizzly, 13-B Primary Breaker, two 40″ x 14′ Heavy Duty Washing Screens and a No. 7 Sand Tank. This producer also operates several other aggregate plants in Wisconsin—all using some Telsmith equipment.

Modernizing, expanding, or planning a new plant—*consult Telsmith engineers.* Get Bulletin G-15.

G-12

No. 36 Telsmith Gyrasphere Secondary Crusher



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13,800 Feet of Rotary Kilns

and Multi-Tube Coolers

were delivered by Traylor, NOT TOO LATE AND NOT TOO FEW, to process alumina, upon which a vital war weapon was entirely dependent, making possible the delivery of thousands of planes, ON TIME.

A kiln was shipped every two weeks. This phenomenal delivery was responsible for the Army-Navy "E" Award, upon War Production Board recommendation.

We are proud of our contribution to the war effort. TRAYLOR kilns are of all welded construction, longitudinal and circumferential joints processed with Lincoln Automatic Welding machines.

CONTACT the company which made the above outstanding record with your kiln and cooler problems.

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RECORD SHOWS MISSISSIPPI WAGONS HAUL G

MISSISSIPPI WAGONS in Acti

VETERAN LOUISIANA HAULING CONTRACTOR FIRST TRIED THREE MISSISSIPPI WAGONS . . . . LATER ADDED NINE MORE . . . . NOW CITES LOW COST RECORD OF 12 UNITS

Griffin & Stewart, Lake Charles, La., have been in the contract-haul business for 20 years. Several months ago, this firm purchased, through our dealer, Dunham-Pugh Company, at Baton Rouge, La., their first MISSISSIPPI WAGONS, buying three units. After thoroughly testing them on long and short gravel hauls, they were so well pleased with the performance of MISSISSIPPI WAGONS they secured nine more; their plans now call for six more units, or **a total of eighteen MISSISSIPPI WAGONS.**

Currently, the 12 MISSISSIPPI WAGONS are hauling gravel 25 miles, one way, or 50 miles, round trip, on a job between Leesville and Alexandria, La. Here is the record of these units, as certified by Griffin & Stewart:

Each MISSISSIPPI WAGON averages a round trip, 50 miles, every three hours, including loading time, or three trips in nine hours. Each unit hauls 10 full yards of gravel per trip, or 30 yards per day. Average consumption of Diesel fuel per trip is 10 gallons, or 30 gallons each 9 hours.

Setting aside for each 9 hours, $11.25 for operator, $4.50 for fuel, $4.50 for repairs and tires, $3.24 for depreciation on tractor, $2.00 for depreciation on trailer, and 45c for oil and grease, each unit hauls 30 yards of gravel for only $25.94.

Hauling 30 yards of gravel 25 miles for $25.94 is slightly less than 3.5c per yard mile.

We cite this record as concrete evidence that the MISSISSIPPI WAGON is a most economical hauling unit, and we are glad to point to this job as an example of how you can depend upon MISSISSIPPI WAGONS to make money for you in the tough postwar period on long or short hauls.

In summing up the desirable qualities of MISSISSIPPI WAGONS, Mr. Griffin makes this statement:

L GRAVEL 25 MILES FOR 3.5c PER YARD MILE

S in Action Near Leesville, La.

SAYS MISSISSIPPI WAGONS "WILL PAY ALL EXPENSES, INCLUDING DRIVER'S COSTS, AND PAY FOR THEMSELVES IN 2,000 HOURS OPERATION."

"If a gravel haul contractor operates a MISSISSIPPI WAGON under normal conditions for 2000 hours (about 15 per cent of its normal life), he should clear enough, above operating expenses and repairs, to completely pay for the unit. We know of no other hauling equipment about which we can make that statement."

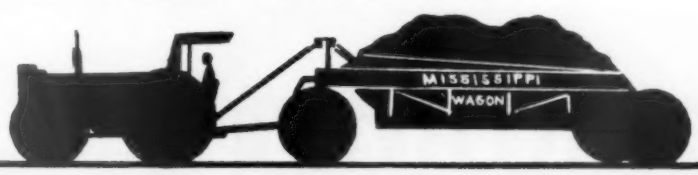
Our Louisiana haul is "normal," seven miles of blacktop and 18 miles of gravel and dirt hills.

The weight transfer feature, found ONLY on MISSISSIPPI WAGONS, will keep repairs to a minimum, since it prevents the vicious pounding and surging of the trailer unit on the tractor while operating at high speed, but provides the needed weight for extra traction when the going is slippery or climbing steep grades.

GET SET NOW!

Prepare for the tough postwar competition by investing in MISSISSIPPI WAGONS—

" THE WORLD'S MOST MODERN HAULING UNIT "



MRS MANUFACTURING CO.
JACKSON, MISSISSIPPI

CLEVELAND H66 SINKER

"TAILOR MADE"
Cleveland Catalog

Let us send a catalog built especially around your own rock drill requirements—no extra pages to thumb through and take up valuable time. Tell us the type of rock drill or other pneumatic machines you are interested in—we'll send a catalog to supply the information you want.

NEED a light, easily-held, air-saving sinker for soft or medium rock? The Cleveland H66 fills the bill perfectly. Strong rotation by this 32 lb. model carries even 12-foot drills down full length in any ground. And compressors pop off more often with Cleveland H66's on the hose lines.

The H66 has drop forge construction, swivel air connections, and strong steel puller easily opened by hand. Fast, efficient automatic valve, renewable chuck bushing, and patented lock nuts to keep side rods tight are other important features. Standard chuck: ⅞" hex. x 3¼" collared; quarter octagon also obtainable.

Bulletin 122 describes this drill in detail as well as many larger models of Cleveland Sinkers. *Ask for it!*

LEADERS IN DRILLING EQUIPMENT

THE CLEVELAND ROCK DRILL CO.
DIVISION OF THE CLEVELAND PNEUMATIC TOOL COMPANY
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PACKAGING in Multiwall Bags offers a space-saving advantage that adds up to box-car proportions.

For example, one ton of a chemical, when packed in Multiwall Bags, will only occupy the approximate space of 1600 lbs. in barrels*. Or, stated another way, *Multiwalls permit a saving of up to 20 per cent storage or shipping space over certain types of metal or wooden containers.* Figure that saving in terms of freight cars or cargo vessels and you have one important reason why many manufacturers are turning to Multiwalls as the solution to more and more of their packaging problems.

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Multiwall Paper Bags are easier to load and unload...they save costly handling time. They will be designed to withstand specific climatic and transportation conditions in all parts of the world.

These bags are moisture resistant, too—a necessary protection for many products. And because they are siftproof, they eliminate siftage losses in transit, as well as messy storage problems.

Multiwall Paper Bags will be especially made to save time and money for your business. Write for full information today.

See how neatly and compactly Multiwall Paper Bags fit in a freight car. This kind of packing protects products and saves time as well as space.

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* Report on bulk packaging prepared by Chemical and Metallurgical Engineering.

Today GATES Synthetic Rubber V-Belts

—are giving *BETTER SERVICE* than any V-Belts Ever Made of *NATURAL RUBBER!*

—and there is a GATES V-Belt precisely engineered to fit any special need

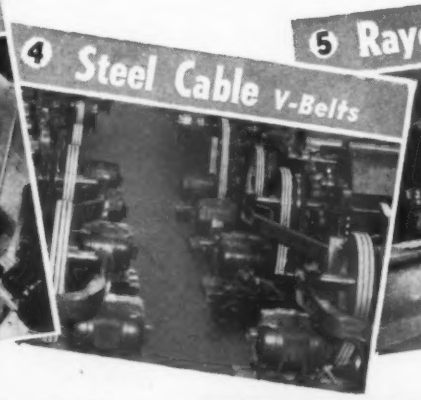
No V-Belts built by *anyone* before the war could stand the service now daily delivered by Gates V-Belts on army tanks, tractors and self-propelled big guns. Gates has developed these greatly superior VBelts through intensified, specialized research—and Gates is building these belts entirely of *synthetic rubber!*

The important point, for industrial V-Belt users, is this:—Every improvement developed by Gates for these Army V-Belts has also been added, day by day, to the quality of the standard Gates Vulco Ropes which have been delivered to you.

As you know, war-time improvements in many *other* products must be withheld from general use until after the war is won—but victory depends so directly upon *production*, and production so directly upon V-Belts which drive the producing machines, that Gates has been able to give you *immediately*, in your Standard Gates Vulco Ropes, every V-Belt improvement which Gates specialized research has developed for use in the Army's motorized equipment.

In addition, where V-Belts of special construction are required, your Gates Rubber Engineer is in position to supply a Gates V-Belt that is precisely engineered to meet your special needs.

Whatever drive problem or V-Belt problem you may have, you need only pick up your phone book and look under the heading "Gates Rubber." The Gates Rubber Engineer will bring right into your plant the full benefits of every advance in V-Belt construction and in drive operation that Gates specialized research has developed.



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Makeshifts

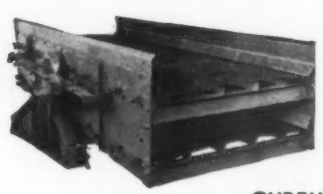
versus

EQUIPMENT THAT FITS YOUR NEEDS

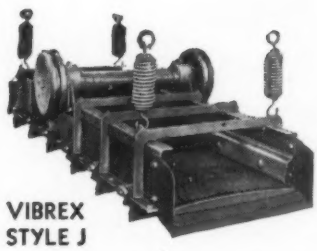
You know your plant—its problems, its capabilities, its needs. You, better than anyone else, know the kind of equipment that will best do your job—your way. And that's exactly what you get—when you come to Robins.

For Robins never tries to sell "misfits" or "makeshifts". Because Robins makes a complete line of machinery to meet practically every bulk materials handling need.

Take Screens, as an example. Robins not only makes many types, for a wide variety of purposes, but has contributed several innovations to this field, such as the invention of the Circle throw principle.



GYREX



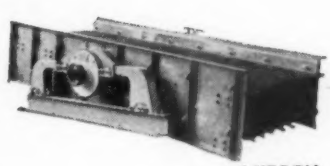
VIBREX
STYLE J

Through Robins you have your choice, for instance, of:

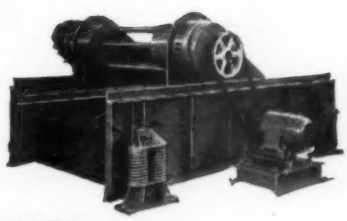
Gyrex Screens, using a positive eccentric principle: made with a steel or cast-iron base, for floor or suspended mountings; in sizes 24″ x 54″ to 72″ x 192″; 1, 2 or 3 decks; capacities to 1000 tons per hour.

The Vibrex Screen, utilizing a centrifugal force created by offset counterweights. Made in Style J for suspended mounting, vibrator above or below frame, in sizes 24″ x 48″ to 24″ x 72″, single deck only; and in Style M for floor mounting, in sizes 36″ x 78″ to 48″ x 120″, 1 or 2 decks.

Then, for sharpest screening at high capacity, or for dewatering, the Robins Eliptex, employing an elliptical throw counter-to-flow of material. Requires less headroom. Made in sizes 36″ x 96″ to 72″ x 192″ with 1, 2 or 3 decks.



VIBREX
STYLE M



ELIPTEX

These Screens, as well as others in the Robins line, are adaptable to a wide range of cloth openings and weaves, to provide exactly the kind and size of Screen you need for every screening purpose.

So whatever your requirement—get in touch with Robins. If you already know what you want, it can be ordered from Robins with confidence. But if you believe your production processes might be improved, our engineering department will gladly survey your conditions and offer specific recommendations, based on years of experience with every kind of screening problem. When writing, please address Dept. PQ-2

ENGINEERS, MANUFACTURERS AND ERECTORS OF MATERIALS HANDLING MACHINERY

ROBINS *makes:* BELT CONVEYORS · COAL AND ORE BRIDGES · BUCKET ELEVATORS · CAR AND BARGE HAULS · CAR DUMPERS · CAR RETARDERS · CASTINGS · CHUTES · CONVEYOR IDLERS AND PULLEYS · CRUSHERS · FEEDERS · FOUNDRY SHAKEOUTS · GATES · GEARS · GRAB BUCKETS · PIVOTED BUCKET CONVEYORS · VIBRATING SCREENS · SCREEN CLOTH · SELF-UNLOADING BOAT MECHANISMS · SKIP HOISTS · STORAGE AND RECLAIMING MACHINES AND SYSTEMS · TAKEUPS · LOADING AND UNLOADING TOWERS · TRIPPERS · WEIGH LARRIES · WINCHES · WINDLASSES

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How a B-G Bucket Loader Can Save Money *the Year 'Round*

Truck loading time is cut to a minimum by the continuous operation of a Barber-Greene Bucket Loader. But more than that, the B-G Loader has year-round utility . . . can hustle along some construction or maintenance job each season.

★ The B-G Loader yields higher yardage, with less power, less weight, and less cost than any other method.

★ It can effectively handle a variety of loose materials—soil, sand, cinders, gravel or roadway debris.

★ Clean pick-up is assured with the follow-up scraper that cuts to grade and does light excavating.

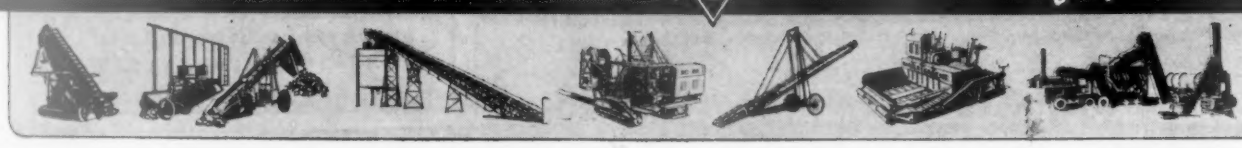
★ Top performance in stockpile or semi-compacted natural deposit loading, light excavating, shoulder shaping or stripping to grade can be maintained with the 12 selective crowding speeds.

★ By substituting a B-G Snow Loader boom, the B-G Loader can be used for street snow removal.

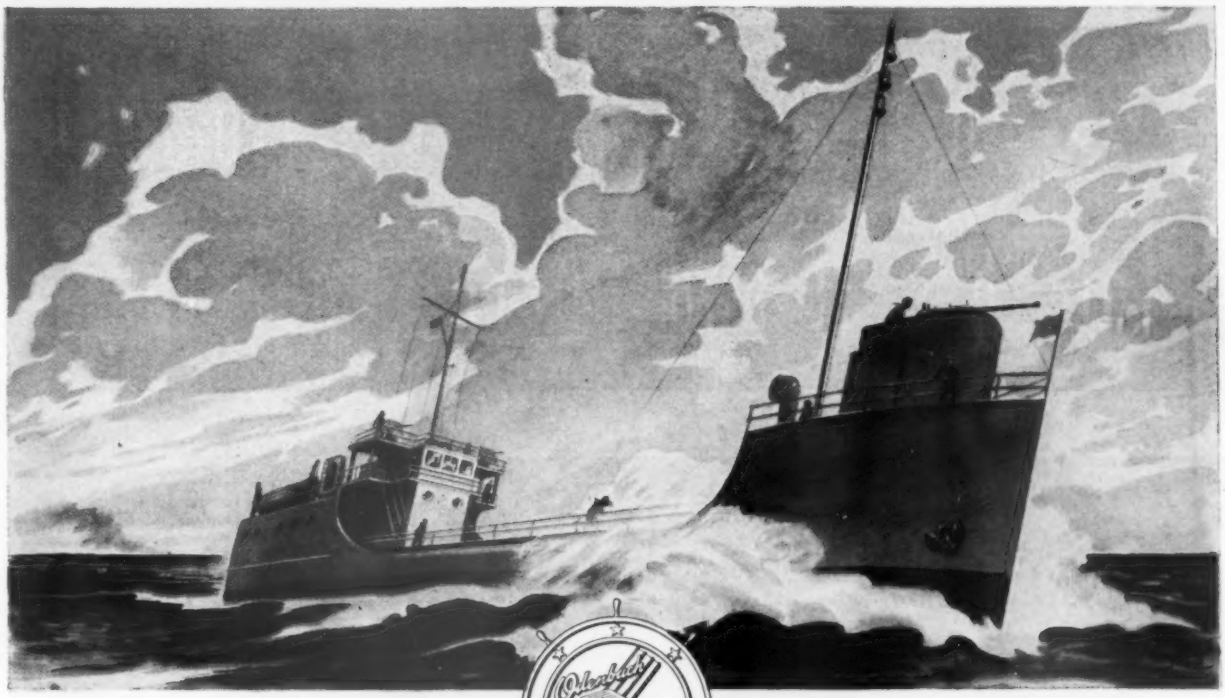
Ask your B-G representative for details on the versatility and economy of B-G Bucket Loaders. Barber-Greene Company, Aurora, Illinois.

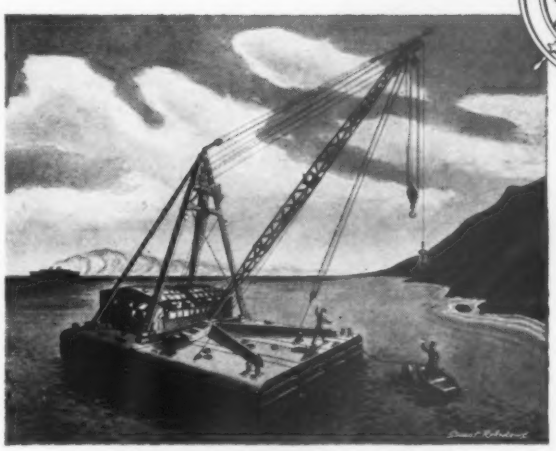
45-3

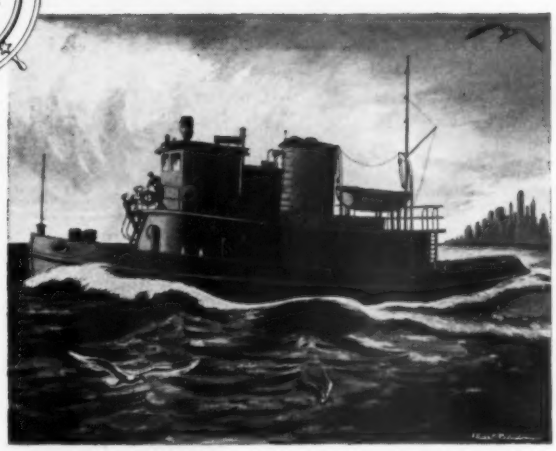
Barber-Greene B G *Constant Flow Equipment*



Odenbach







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Write for our Booklet on Designs, Shipbuilding, Conversions and Repairing

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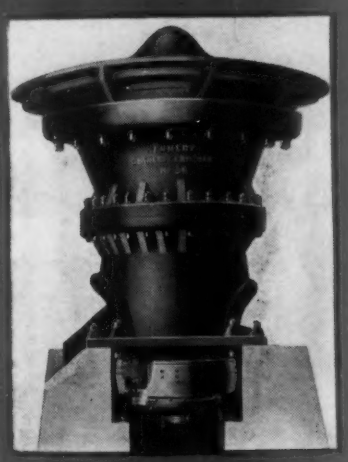
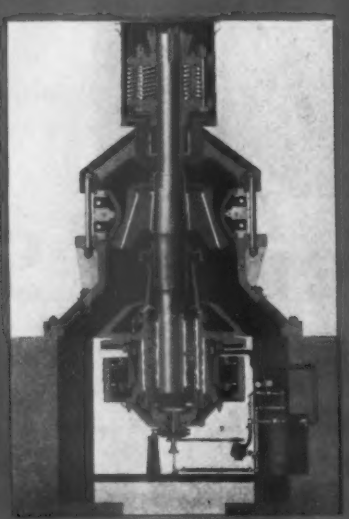
"YOU NEED IT"

A complete line of equipment for the Pit and Quarry Operator

KVS Crushers give more tonnage per horse power



KVS Gyratory Gearless Short Shaft Standard Crusher for primary reduction. Forced feed lubrication. Reversible top shell. Easy accessibility.



KVS Ball Bearing Gearless Crusher, low head type, for fine reduction. Synchronous motor built-in pulley applies all power direct to crushing.

Never before has the crushed stone producer faced such an urgent demand for his product—and with so little chance for correcting an error in machine selection.

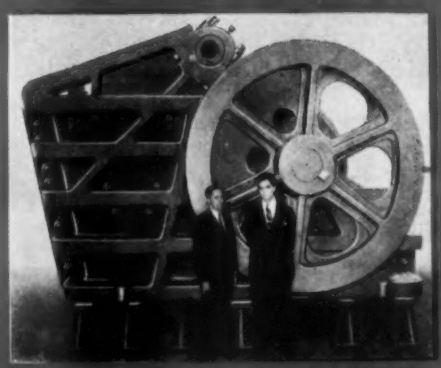
Experienced operators who "really can pick 'em" select KVS units for all 'round adaptability, serviceability and economy on crushing, washing, screening, or conveying jobs.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

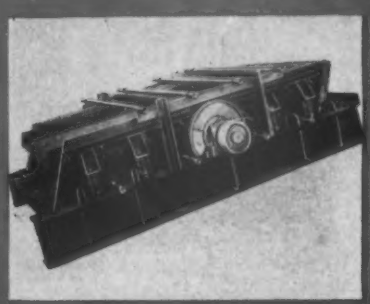
"WE'VE GOT IT"

KENNEDY-VAN SAUN

Representatives in all principal U. S. cities



KVS Swing Jaw Crusher is extra heavy duty type, for handling large tonnages of the toughest rocks. Available in sizes for all output or feed requirements.



KVS Vibrating Screen features low installation and upkeep costs. Furnished in two types, and several sizes, with screening efficiency approximating 95%.

ARMY E NAVY

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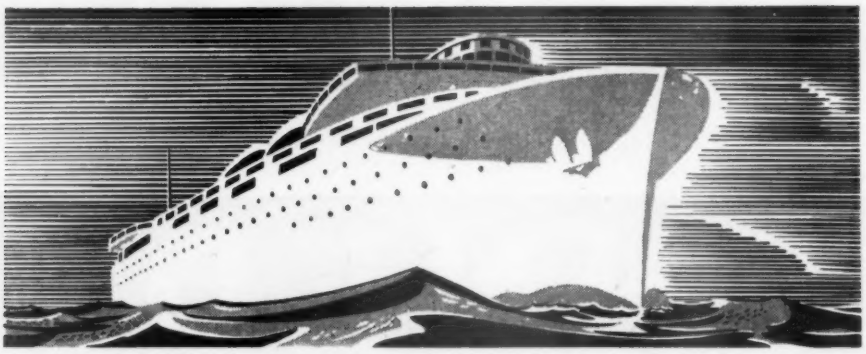

Your ship comes in

When the ship's engines have the cylinders treated with PORUS-KROME . . . *your ship comes in.* It is mighty important in marine engines to do everything possible to prevent the ship being held up for engine repairs far from home.

This is equally true when "your ship" is a bus . . . or a truck . . . or a farm tractor working the far forty. Reliability of engine performance, which assures that you will always get home, is most important.

PORUS-KROME, because of its peculiar characteristics, reduces scoring and scuffing and the risk of piston seizure to the absolute minimum. It not only adds to the reliability of the engine, but it multiplies the life of the cylinders from four to twenty times, thus greatly reducing costs of overhauling for cylinder repairs.

PORUS-KROME, applied to cylinder bores by the Van der Horst process, is pure, hard chromium which has myriads of tiny pores and channels in its surface. These pores and channels serve as reservoirs which hold lubricating oil and feed it back to the cylinder surface as needed. Better lubrication, plus the fact that chromium is so much harder than iron or steel, reduces wear to a minimum.

Plan now to have PORUS-KROME in your gasoline and Diesel engines. Write for booklet telling more about PORUS-KROME.

PORUS - KROME

Good for the Life of your Engines

VAN DER HORST

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VAN DER HORST CORPORATION OF AMERICA

AN AFFILIATE OF DRESSER INDUSTRIES

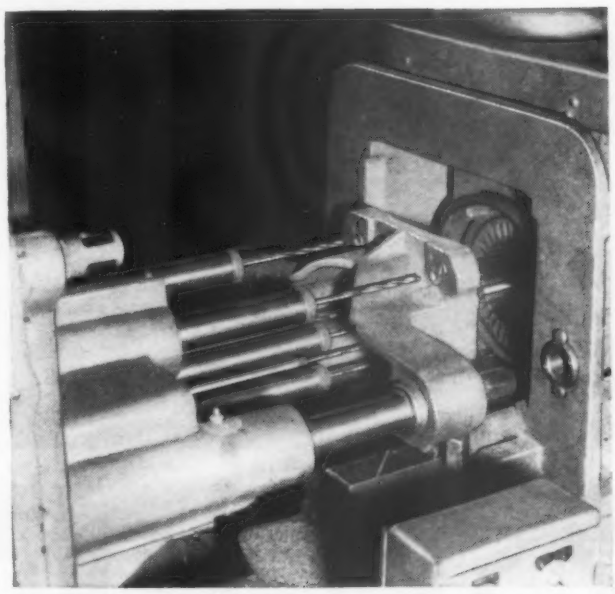
OLEAN • NEW YORK
CLEVELAND 11 • OHIO

BLESSED BOLT HOLES

It's a blessing to electricians and maintenance men when bolt holes in motor end shields and frames are exactly in line, and mounting holes in the feet are uniformly and accurately positioned. Installation is easier. Interchanging of motors, rotating of end shields, and reversal of stators are all more quickly accomplished. Tight fits are obtained without forcing. Bearing alignment is insured, internal strains are avoided. During the war period, jig-fixture uniformity maintained in machining, drilling, and tapping Tri-Clad motor frames has saved thousands of man-hours of installation and servicing.

End shields are easily rotated for inverted motor mounting.

JIGS AND FIXTURES OF ADVANCED DESIGN MEAN CLOSE FITS IN TRI-CLAD MOTORS



Frame-drilling operation at G.E.'s Lynn (Mass.) Works.

Specially built production equipment, as well as test apparatus, helps build Tri-Clad motors with close fits and clearances. Here, all bolt holes in the frame are drilled in a single operation within a rigid fixture that insures accurate positioning. In the finished motor, this results in more accurate shaft alignment, smoother operation, longer bearing life. General Electric's high-volume motor production permits tooling up for high precision without increasing the cost to you. *General Electric Co., Schenectady 5, N.Y.*

GENERAL ELECTRIC

TRI-CLAD MOTORS

Buy all the BONDS you can—*and keep all you buy.*

TIME *is money in road building*

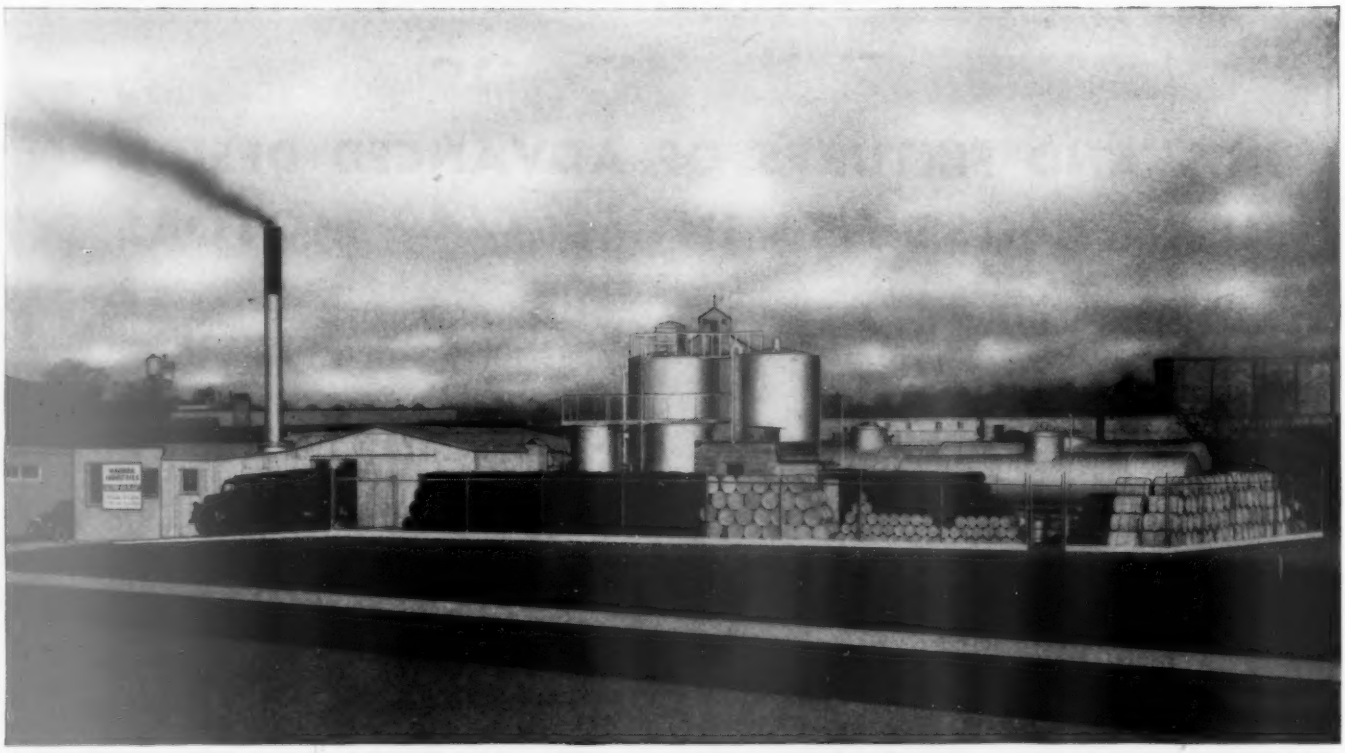
It's time **NOSTRIP**, the *tested and approved** admixture for tar and asphalt, went to work for you! Time that **NOSTRIP**-treated bitumen saved you time and labor dollars on the job . . . putting you days ahead of schedule . . . extending your road season six weeks! Your first drum is our best salesman; it proves an invaluable time and money saver because:

The coated aggregate can be laid at any temperature above Zero; heating or drying is unnecessary. It laughs at water, easily passing the Distilled Water and Nicholson Stripping Tests. The treated bitumen adheres permanently to any road surface, wet or dry . . . even in rainstorms!

NOSTRIP halves blading and mixing time, and used with R. C. cutbacks speeds construction of airport runways, roads and shoulders. It is ideal for bank run gravel or beach sand in coastal regions. A boon to Travel Plants, **NOSTRIP** doubles adhesion. With hydrophyllic aggregates, lime or other additions are never needed.

*You do not experiment when using **NOSTRIP.** It has proven itself in all types of installations for four years and is now used in thirty-three states! Write for laboratory and field test reports, and we will send unbiased testimony from State Highway Officials and contractors . . . You be the judge!

★ *Our large modern plant in Jamaica, N.Y., (below) can produce enough* **NOSTRIP** *to treat 1,000,000 gallons of asphalt per day.*



THE ALL-YEAR ROAD MATERIAL

NOSTRIP

AN ADMIXTURE FOR TAR AND ASPHALT

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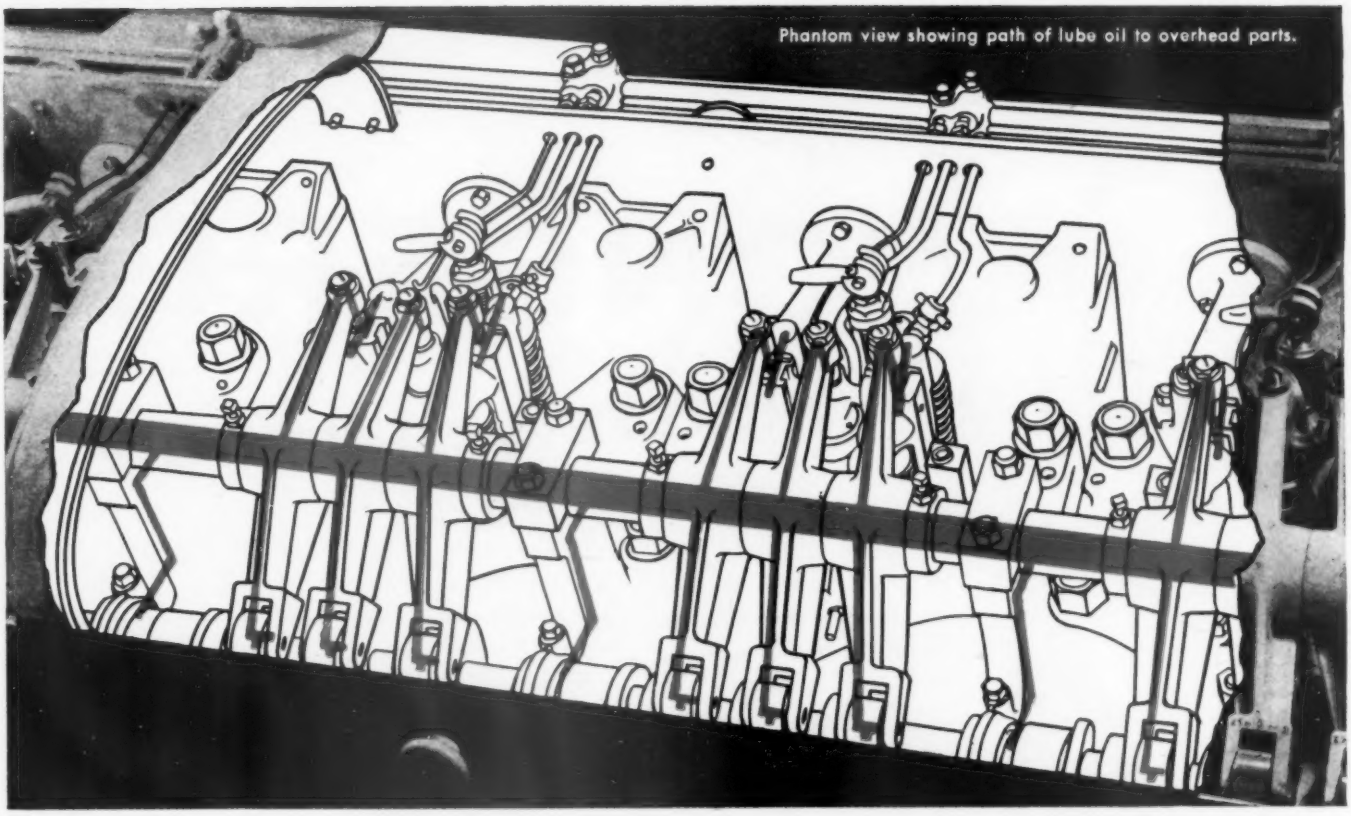

NOW LESS TIME OUT FOR SERVICING

Hendy Diesels are *completely pressure-lubricated*

You don't need to hand-lubricate any part of a Hendy Series 50 Diesel. Complete enclosure of the engine enables full pressure lubrication throughout the entire engine of *all* wearing surfaces and parts.

All overhead parts such as camshaft, rocker arms, valve crossheads, guides, and valve stems receive a constant supply of clean oil from the pressure lubricating system. Because of this feature, the time required for routine servicing is reduced. And, what is even more important, correct lubrication of all parts at all times is automatically assured.

Full pressure lubrication is just one of 22 proved design features you'll like in the Hendy Series 50 Diesel. Some other are . . . fresh-water cooling, unit-type fuel injectors, dual intake and exhaust valves, and hydraulic tappets.

Here's why it was possible to incorporate so many modern features in the Series 50 Diesel: Hendy engineers were under no obligation to salvage either parts or tooling from outmoded models when the Series 50 was designed. They were free to use all modern features—all advancements in engineering or metallurgy —that had been proved thoroughly dependable. As a result, the Series 50 is a Diesel engine modern in design, dependable in operation, and low in maintenance and operating costs.

Hendy Series 50 Diesels, 350 to 675 hp, are available as direct-reversing main-propulsion units and, with Crocker-Wheeler generators, as power units for vessels with electric drive or as auxiliary power plants.

Send today for your copy of the new illustrated booklet that contains full information on this thoroughly tested new Diesel.

JOSHUA **HENDY** IRON WORKS

ESTABLISHED 1856

SUNNYVALE, CALIFORNIA

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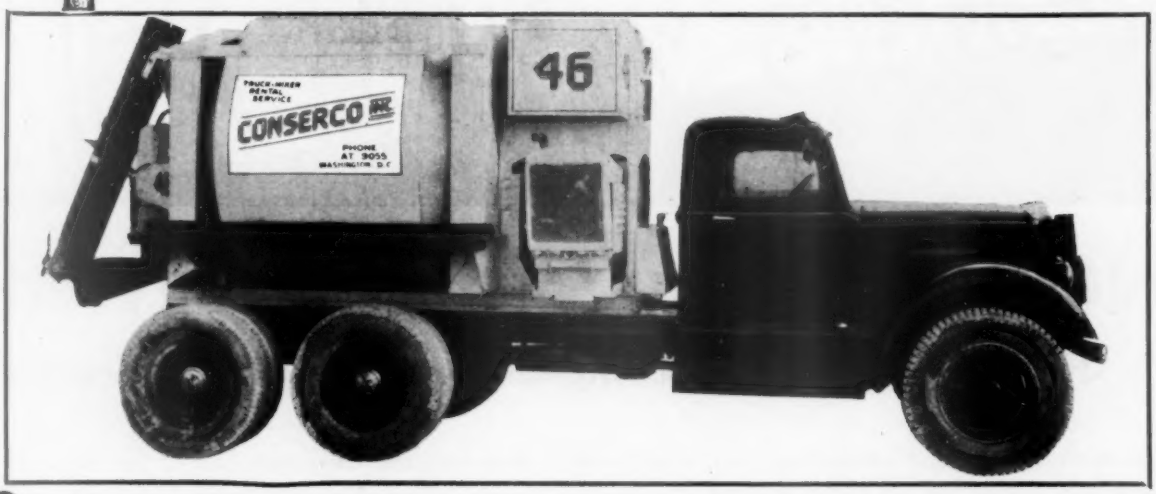
"an important message from

CONSERCO

to CONCRETE DISTRIBUTORS"



Listen to this **7** Point Profit-Program

Foresighted producers of ready-mixed concrete are adopting the CONSERCO Complete Truck Mixer Rental System as a surety of large-scale and *profitable* contributions to the war effort.

CONSERCO offers several convincing features to contractors who wish to serve both local and distant markets without increasing capital investment:

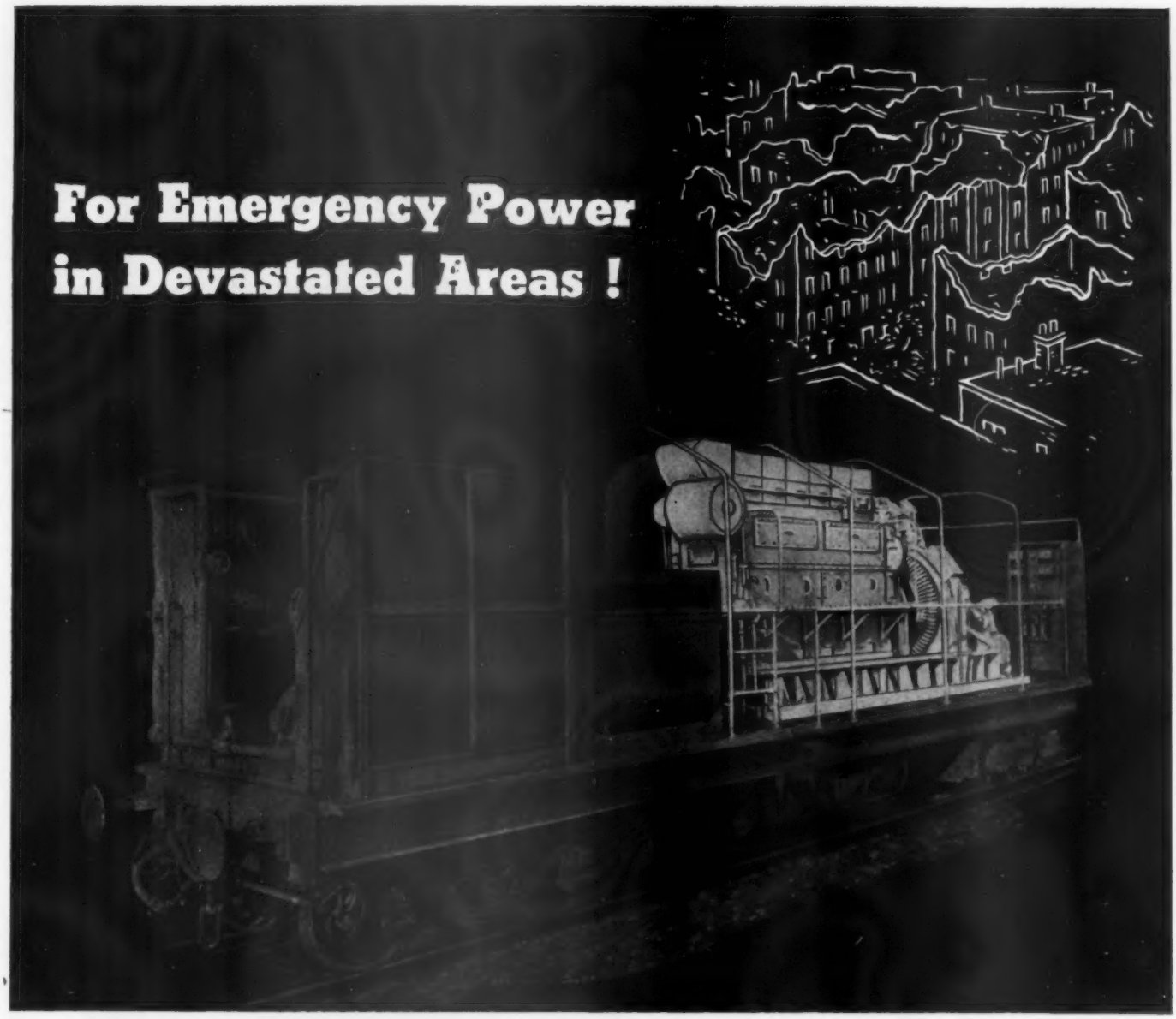
- 4, 4½, or 5 yd. truck and mixer
- Truck and Mixer Maintenance
- Experienced driver
- Truck delivered to the job
- Gasoline
- Insurance
- Oil

Deliver ANYTIME, ANYWHERE

Write for full details, including rates

CONSERCO, INC., 1600 South Capitol St., Washington 3, D. C.
Phone: ATlantic 9055

For Emergency Power in Devastated Areas !



300 KW POWER PLANT ON WHEELS

EVER in the vanguard of victory, this mobile power plant is used today for the immediate restoration of light and power in conquered, war-torn areas! Here, where performance is all important, Diesel engines as well as men, cannot fail!

Performance is assured, for the heart of this vital rehabilitation unit is the CP 612 Diesel Engine. Selected for its dependability, compact design and outstanding service, the CP 612 Diesel operates at 750 rpm., demonstrating the smooth-running efficiency and the rugged construction characteristic of *all* CP Diesels.

CP DIESEL ENGINES, in 23 sizes, ranging from 3 to 8 cylinders, 150 to 1000 hp., are supplying economical dependable power to countless home front industries.

★★★★★★★★★
PNEUMATIC TOOLS
ELECTRIC TOOLS
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ROCK DRILLS

CHICAGO PNEUMATIC
TOOL COMPANY
General Offices: 8 East 44th Street, New York 17, N. Y.

★★★★★★★★★
AIR COMPRESSORS
VACUUM PUMPS
DIESEL ENGINES
AVIATION ACCESSORIES

205 NEW KOEHRING CRUISER CRANE

Does short odd jobs faster. Gets there quicker — at 5.9 M.P.H. Moves loads faster because it can travel, swing, hoist, raise or lower boom... all at the same time. One-man operation, both working and traveling, cuts labor cost. Hydraulic Steering... Stable Chassis... Eight 12:00 x 20 Tires ...Visibility Unlimited. Approximately 7-ton capacity.

KOEHRING COMPANY
Milwaukee 10, Wisconsin

ORDERS ACCEPTED
Now
FOR POST-WAR DELIVERY

ARMY E NAVY

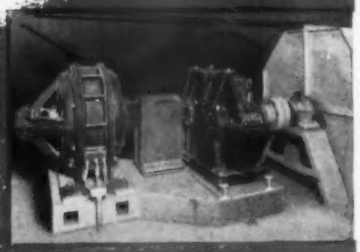
KOEHRING HEAVY DUTY

HEAVY-DUTY CONSTRUCTION EQUIPMENT

Jones HERRINGBONE SPEED REDUCERS

• This view of a Jones Triple Reduction Herringbone Speed Reducer typifies a line that is noted for advanced design, superior materials and precision workmanship.

Catalog No. 70 of Jones Herringbone Reducers presents a vast amount of data relating to Herringbone Reduction Units. Illustrations show a broad range of herringbone reducer applications, and technical information shows how to select reducers for all conditions of service in accordance with the A.G.M.A. recommended practice.



• Jones Reducer on a cement mill elevator head shaft drive.

• Double type Jones Herringbone Speed Reducer driving kiln in cement plant.

• Jones Speed Reducer on a feeder drive in cement mill.

JONES Herringbone Gear Speed Reducers are built in a wide range of ratios and ratings to cover every requirement. Single (Type SH) reducers in standard ratios range from 1.25 to 1 up to 11 to 1 in ratings from 1.3 to 440 H.P. Double (Type DH) reducers are built in standard ratios from 10.9 to 1 up to 72 to 1 in ratings from 0.5 to 275 H.P. The triple reduction reducers (Type TH) cover a range of ratios from 86.9 to 1 up to 355.8 to 1 in ratings from 0.3 to 78 H.P.

All these reducers have heat treated gears, ground shafts and are mounted with anti-friction bearings throughout. Cast Iron bases are available for all variations of motor assembly.

W. A. JONES FOUNDRY & MACHINE CO.
4441 Roosevelt Road, Chicago, Illinois

HENDRIX

Lightweight DRAGLINE BUCKETS

TYPES

LS . . . A lighter weight bucket designed for levee and drainage work.

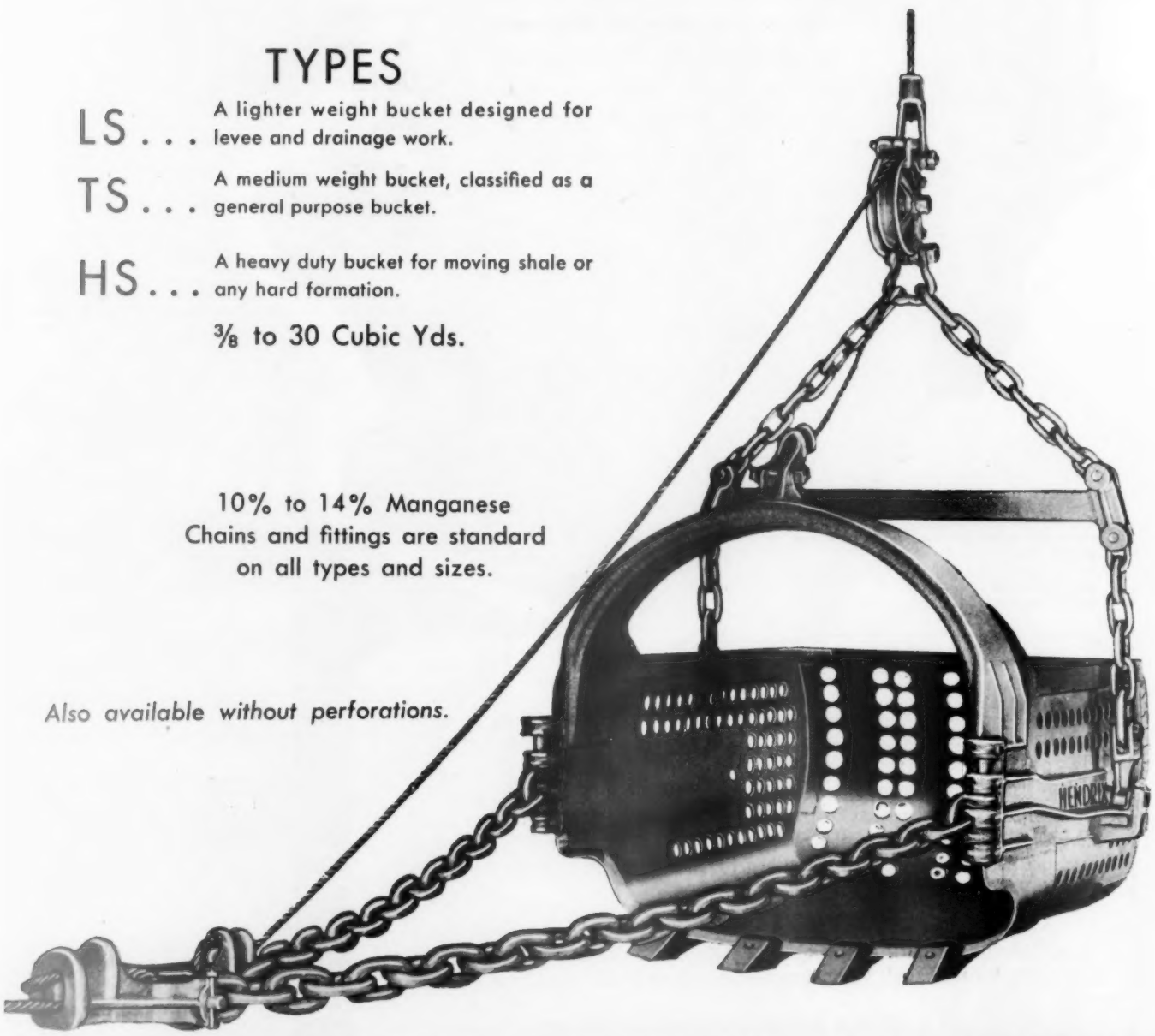
TS . . . A medium weight bucket, classified as a general purpose bucket.

HS . . . A heavy duty bucket for moving shale or any hard formation.

⅜ to 30 Cubic Yds.

10% to 14% Manganese
Chains and fittings are standard
on all types and sizes.

Also available without perforations.



DESOTO FOUNDRY, INC. • MANSFIELD, LOUISIANA

PROVED ON OVER 400 UNITS

The ball-bearing principle of grinding on B&W Direct Firing Pulverizers

The ball-bearing principle of grinding combines crushing and attrition under controlled pressure. It produces the fineness of fuel necessary for efficient combustion at all rates of operation. This principle of grinding permits a wide range in size of pulverization and conditions of operation. The pulverizer is moderate in space requirement per unit of capacity.

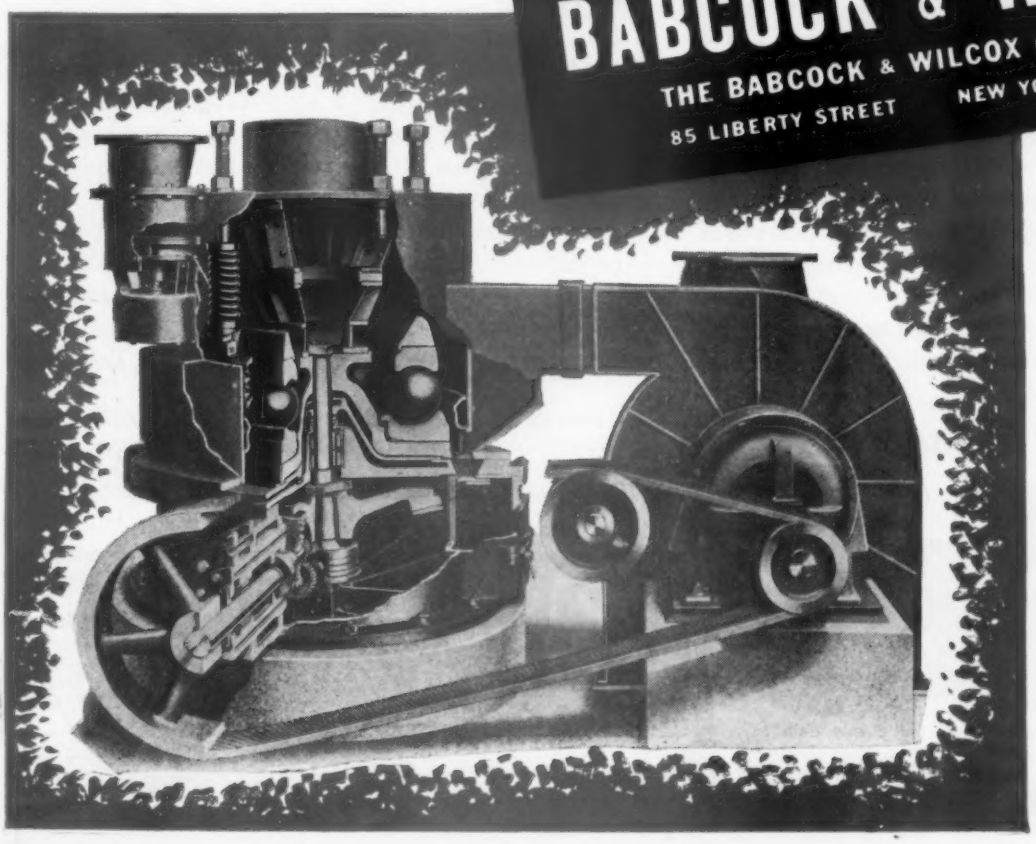
B&W Type E Pulverizers are known for their:

- Consistently high fineness.
- Ability to handle high-moisture coals.
- Reliable operation and low maintenance.
- Uniform delivery of coal.

B&W's well-rounded experience in design, manufacture and installation of direct-firing pulverizers is at the service of cement plant owners and operators.

BABCOCK & WILCOX

THE BABCOCK & WILCOX COMPANY
85 LIBERTY STREET NEW YORK 6, N. Y.



Cut-away view of the B&W Type E Pulverizer

C-59

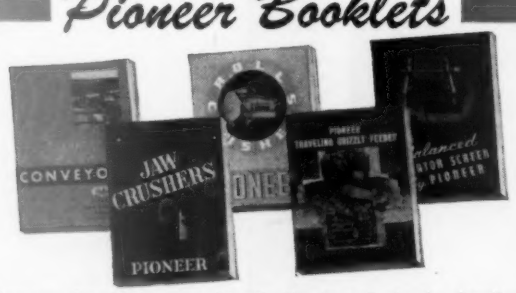
THERE SHE STANDS, the Pioneer plant that is producing 50 cubic yards of material per hour, passing a ½" round, for the longest continuous asphalt job ever undertaken in the State of Texas —43 miles. A Pioneer travelling grizzly feeder receives the quarry material and regulates its flow to the crushing set-up. The first crushing unit is a *Pioneer 20x36 anti-friction jaw crusher* mounted on trucks. Crushed material is carried from the jaw crusher by a 30"x70' Pioneer Belt Conveyor to a 4x10 *Pioneer triple deck vibrating screen*, mounted over a *Pioneer steel bin.*

The oversize is conveyed to two *Pioneer roll crushers,* one equipped with corrugated manganese shells, the other with smooth manganese shells. Crushed material feeds back to the main conveyor thus closing the cycle. The project is typically Texan in size—widening a 20 foot surface to 22 feet and placing a hot mix asphalt concrete leveling and surface course for an average of one inch in thickness over the entire width and for a length of 43 miles. Over 30,000 tons of hot mix asphalt concrete are required.

And required of the aggregate producing plant is continuous, dependable, low-cost production to meet all operating schedules and to make every job show a profit. Pioneer was the choice of the contractor, The Texas Bitulitic Company, Dallas.

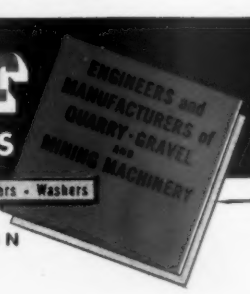
Pioneer equipment is profit making equipment. It is durable and built to function with a minimum of maintenance. Planning with Pioneer involves no obligation. Regard its complete service as an ally of your business which is always available.

Pioneer Booklets



Pioneer Booklets, graphically illustrated, simply detailed, contain money making information for the man getting ready for tomorrow's job. Write for them today.

Pioneer
ENGINEERING WORKS



Jaw Crushers • Roll Crushers • Screens • Conveyors • Feeders • Washers

MINNEAPOLIS 13, MINN

"Primacord helps make our shots more effective!"

Because time and explosives both cost money, quarry and pit operators logically look to Primacord to help make their shots more effective.

Primacord allows *effective planning*, because there is virtually no limit to the number of holes in a shot which may be fired with Primacord.

Primacord allows *effective loading*, because it detonates every cartridge in the hole. Loads can be varied according to rock strata, split into decks, given the right power at the right place.

Primacord allows *effective timing*, because its detonating wave is practically instantaneous, but moves in a definite sequence. Front rows shoot first, relieving the pressure a split second ahead of the back row shots.

Primacord allows *effective firing*, because it imparts a powerful detonation to each cartridge, results in full efficiency of the explosives.

Primacord allows *effective working*, because it gives better fragmentation for easier handling.

P-2

THE ENSIGN-BICKFORD COMPANY • Simsbury, Connecticut

Five fingers up for five reasons to choose Primacord Detonating Fuse.

Also
ENSIGN-BICKFORD
SAFETY FUSE
Since 1836

PRIMACORD-BICKFORD Detonating Fuse •

Why LIMITAMP CONTROL is good for MILLIONS of operations

NEW AIR-BREAK CONTACTORS

Daily demonstrating their remarkable stamina in severe repetitive service

THESE new contactors meet the most severe requirements of high-voltage motor-control service. Their design gives them a mechanical life of millions of operations. Contact-tip life of many times the life of comparable oil-immersed tips makes these air-break contactors the logical answer for any severe duty—in steel mills, rubber mills, etc. The current-limiting fuses, Type EJ-2, are an especially important feature. They operate in a split cycle. When a short occurs, they cut off the rise in current in less than a quarter cycle, and clear it in less than a half cycle—long before the short has had time to harm the contactor or motor.

Here are 3 other important advantages

1. *Personnel protection*—Totally metal-enclosed, Limitamp controls give protection to operating personnel.

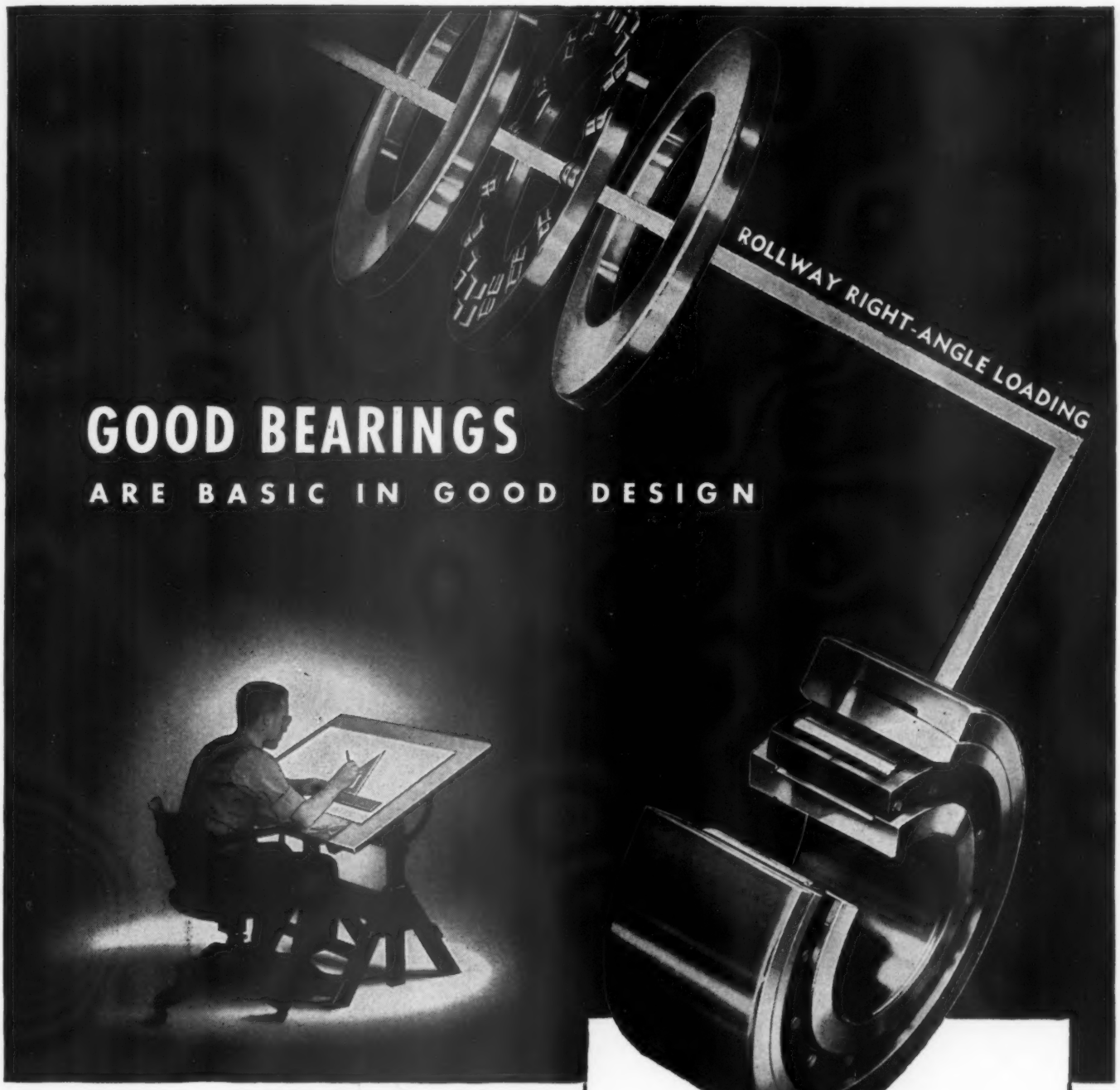
2. *Overload protection*—Isothermic overload relays, calibrated accurately against actual motor characteristics, protect the motor from overheating due to sustained overloads or single-phasing.

3. *Undervoltage protection*—All Limitamp controllers can be furnished with instantaneous or time-delay undervoltage protection.

YOU'LL WANT TO KNOW all about this motor control. How separate compartments for the high- and low-voltage circuits protect the operator. How a group of these starters can be fitted together to give you a neat, compact control panel. Our local sales engineers will be glad to help you select a control to fit your application. *General Electric Company, Schenectady 5, N. Y.*

Buy all the BONDS you can—and keep all you buy

GENERAL ELECTRIC — **INDUSTRIAL CONTROL**



GOOD BEARINGS
ARE BASIC IN GOOD DESIGN

You won't get far in postwar competition without good bearings. And for any machine, a good bearing means simply that type which handles the load most efficiently and economically with the least maintenance cost and worry. That's where Rollway's Right-Angle Loading shines. It reduces load magnitudes and simplifies stresses. There's no piling of thrust loads on radial bearings or radial loads on thrust bearings. Shut-downs for bearing service and replacement are few and far between.

No Oblique Resultants . . .

Rollway's Right-Angle Loading splits compound loads into their two components of pure radial and pure thrust. Each component is carried at right angles to the roller axis on separate bearing assemblies. No oblique loads and resultants, no thermal float or uncalculated thrust can impose secondary pressures on any Rollway Bearing. That means a bearing of given dimension will last longer, or carry heavier loads, or run at higher shaft speeds, or give any proportional combination of all three. Send us your drawings for free analysis. Without cost or obligation, we'll tell you how to get more service from your bearing dollars.

ROLLWAY BEARING COMPANY, INC.
Syracuse 2, N. Y.

since 1908 makers of

ROLLWAY CYLINDRICAL ROLLER BEARINGS

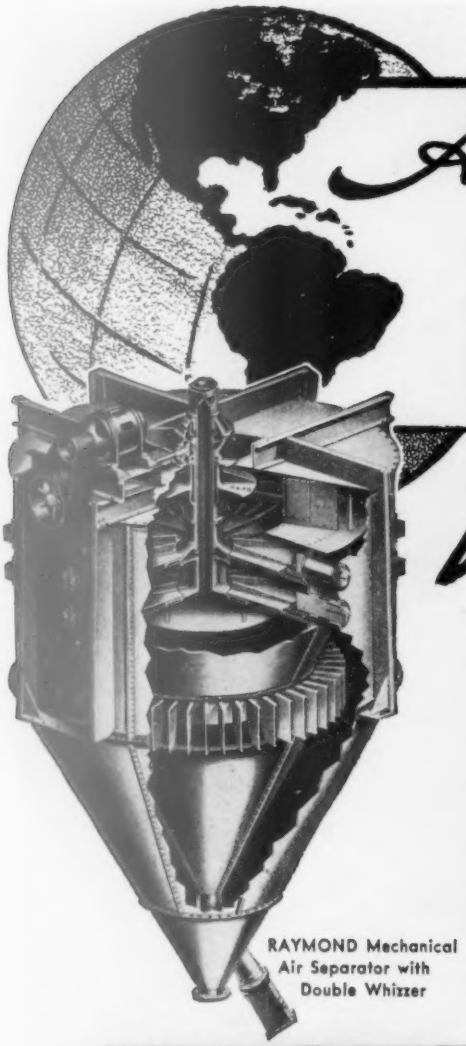
SALES OFFICES: Philadelphia • Boston • Pittsburgh • Youngstown • Cleveland • Detroit • Chicago • St. Paul • Houston • Tulsa • Los Angeles

All AMERICA . . .

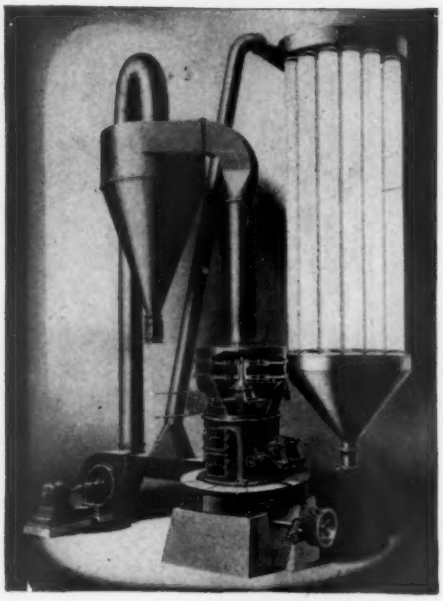
DEPENDS ON RAYMOND EQUIPMENT

for . . .

PRODUCTION OF CEMENT GYPSUM LIME PHOSPHATE ROCK and other Non-Metallic Minerals



RAYMOND Mechanical Air Separator with Double Whizzer



RAYMOND Roller Mill with Double Whizzer Separator

RAYMOND Automatic Pulverizer with Whizzer Separator for Grinding and Classifying Lime

SINCE 1887

With the rock products industry extending its activities over both continents, Raymond pulverizing and separating machinery offers time-proved methods of producing uniform finished materials to meet any range of specifications required by varying local demands.

Raymond Roller Mills . . . Low-Side and High-Side types for fine or superfine grinding . . . are available in capacities for any requirements. With air drying systems, they can handle moisture-laden materials like raw gypsum rock, clays or limestone, *drying and pulverizing in a single operation.*

Raymond Mechanical Air Separators with Single or double whizzer give close product control in classifying cement, lime and similar materials. They insure greatly increased output, from 25% up to 75%, when used in closed circuit operations with grinding mills.

Raymond Automatic Pulverizers are standard equipment for lime production, both agricultural lime and superfine chemical hydrate, to any degree of fineness up to 99.5% passing 400-mesh.

Catalogs giving complete data will be forwarded on request.

RAYMOND
PULVERIZER DIVISION

COMBUSTION ENGINEERING COMPANY, INC.

Sales Offices in Principal Cities
Canada: Combustion Engineering Corp. Ltd., Montreal

1321 North Branch Street, CHICAGO 22, ILL.

Lay-Set is pre-broken-in

● When you put Hazard **LAY-SET PREFORMED** on your machine, you install a wire rope that is ready to start work. You don't have to "baby" it. The preforming process sets each wire and strand at complete ease and relaxes the steel. That's why **LAY-SET** can work hard from the word **GO**! More than this, **LAY-SET PREFORMED** is easier and faster to install and safer to handle. It lasts longer, therefore gives greater dollar-value.

HAZARD WIRE ROPE DIVISION
WILKES-BARRE, PA.
ATLANTA
CHICAGO
DENVER
FORT WORTH
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PITTSBURGH
PORTLAND
SAN FRANCISCO
TACOMA

AMERICAN CHAIN & CABLE
BRIDGEPORT

HAZARD LAY-SET Preformed WIRE ROPE

Check the 10 extra features you get in Thor DRIFTER ROCK DRILLS

- POSITIVE POWER CONTROL
- EXTRA HEAVY RIFLE BAR
- POSITIVE SET RATCHET ACTION
- BALANCED POWER PISTON ACTION
- EXCEPTIONAL HOLE-CLEANING
- AUTOMATIC LUBRICATION
- LOW AIR CONSUMPTION
- MINIMUM VIBRATION
- MEASURED AIR
- SMOOTH OPERATION

These features mean
POWER . . .
SPEED . . .
ECONOMY

Positive, short-travel valve action gets full power from ALL the air that enters Thor Rock Drills to provide stronger rotation and exceptional hole-cleaning ability. This is why Thor Drifter Rock Drills give more footage per shift and one of the reasons for their extra drilling speed.

Extra heavy rifle bar assembly and positive set ratchet action, plus balanced power piston action, assures dependable rotation to deliver a fresh cut with every blow for rapid advance into the hardest rock. The exceptional hole-cleaning ability of Thor Drifters adds still further to the rate of penetration. Thor design applies a constant jet of air and water at the drill point: provides an extra blast of air when needed —to keep the hole perfectly clean. Many other Thor construction features—automatic lubrication—low air consumption—minimum vibration, contribute to making Thor Drifter Rock Drills TOPS for fast, efficient, low cost drilling.

Thor PORTABLE Electric & Pneumatic TOOLS

Write today for Catalog No. 42A

INDEPENDENT PNEUMATIC TOOL COMPANY
600 W. Jackson Blvd., Chicago 6, Illinois
Branches in Principal Cities
New York Los Angeles San Francisco Salt Lake City Seattle

SINKERS • DRIFTERS • STOPERS • SAWS • SUMP PUMPS • HITCH CUTTERS

Body with open or scoop end
(Right) Same body elevated.

X-112 BODIES *and* T-4440 HOISTS *for* OPEN PIT MINING

Body with automatic
downfold tailgate.

Fleets of Trucks, equipped with Gar Wood X-112 Bodies and T-4440 Hydraulic Hoists, are hauling the biggest loads ever moved by trucks on production schedules. Lower mining costs have been made possible by speeding up the handling of overburden, ore and coal.

SPECIFICATIONS

HOIST—Hydraulic, twin cylinder, telescopic.

PUMP—Gear type with aluminum wearplates.

POWER-TAKEOFF—2-gear single speed.

BODY—Heavy duty with pressed-steel, box-type side braces and cross members.

BODY SHELL—$\frac{1}{4}$" sheet steel with 2" wood filler.

WEARPLATE—$\frac{1}{4}$" with floor angles or $\frac{5}{16}$" without. Longitudinals 8-inch "H" beams.

CAB SHIELD—$\frac{1}{4}$" plate.

FLOOR ANGLES—Optional.

Automatic gate opens as body elevates.

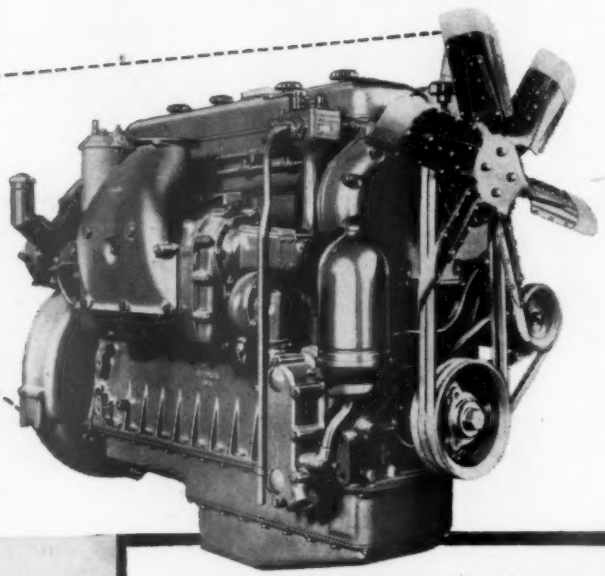
GAR WOOD INDUSTRIES, Inc., Detroit 11, Michigan

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

WORLD'S LARGEST MANUFACTURERS OF TRUCK AND TRAILER EQUIPMENT

WATCH 2-CYCLE!

The Modern Diesel for Modern Operators



Keep your eyes on 2-cycle Diesel tractors and motor graders! Out to smash all operating records . . . these units will play an important part in speeding up and cutting the cost of stripping, road-building, cleaning up. When they are working in your territory . . . check their performance . . . satisfy yourself that 2-CYCLE is the kind of power you want.

WHAT 2-CYCLE DIESEL POWER MEANS:

TO A TRACTOR

It means *plenty of drive!* Every down stroke of the piston is a power stroke. It means *smoother power*—maintains high torque over a wide speed range. It means *faster power*—there is quick pick-up . . . less gear-shifting . . . high-speed operation. It means *thrifty power.* Unit injectors simplify fuel system, reduce maintenance cost — fuel is thoroughly atomized, burns completely and develops maximum power.

TO A MOTOR GRADER

It means power to move *more material.* Extra dirt-moving capacity is built into the A-D Motor Grader. You can handle the heaviest kind of work — from deep, tough scarifying to high, heavy, bank cuts. You get a *smoother job,* too — has the reserve power to carry you through tough cuts with fewer blade adjustments. Gets the job done *faster*—works in a higher gear!

KEEP AN EYE ON THE FUTURE

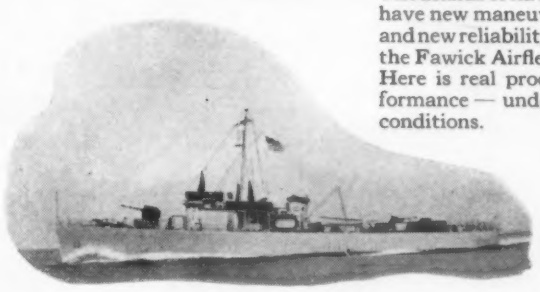
BUY AND KEEP WAR BONDS

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

We're Looking for

Clutch Trouble



Thousands of naval vessels have new maneuverability and new reliability through the Fawick Airflex Clutch. Here is real proof of performance — under battle conditions.

Now you can equip your heavy duty machines with a clutch that is proof against trouble.

The Fawick Airflex Clutch controls torque by air. Actually, it gives you air-cushioned power. It absorbs shock and vibration, with a clutch grip as firm, or as light, as the job requires.

This revolutionary new clutch needs no arms, levers or springs. It requires no adjustments, no lubrication. It corrects automatically for misalignment. Maintenance costs are unusually low.

The Fawick Airflex Clutch has proved itself in heavy duty service—for Diesel drives, marine and industrial, presses, rubber, paper and steel mills, hoists, draglines, cranes and shovels—wherever the going is tough.

Write us for engineering recommendations based on broad clutch experience.

FAWICK AIRFLEX COMPANY, INC.
9919 Clinton Rd. · Cleveland 11, Ohio

In Canada, **Renold-Coventry Ltd., Montreal, Toronto, Vancouver**

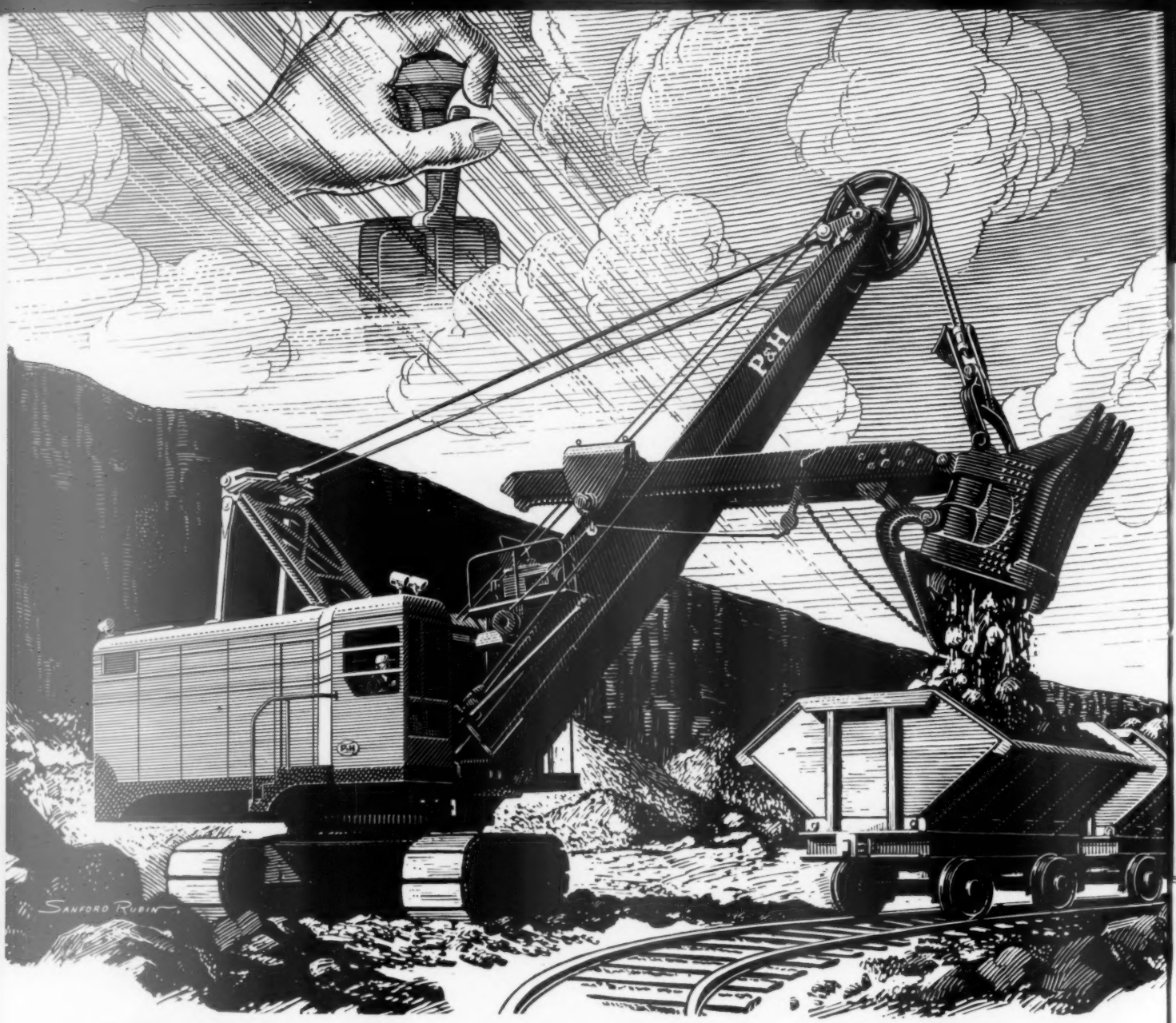
In Britain, **Crofts Engineers, Ltd., Bradford, England**

12 Important Advantages

1. **Simple in design and operation**
2. **Flexible control by air**
3. **No adjustments or oiling — low maintenance**
4. **Dampens vibration—absorbs shocks**
5. **Corrects misalignment automatically**
6. **Smooth starting—no jerks**
7. **Runs cooler—uniform pressure**
8. **Controls torque by air pressure**
9. **Greater capacity—more compact**
10. **Remote control by air valve**
11. **Replaces flexible couplings**
12. **Acts as clutch, slip-clutch, brake and coupling**

FAWICK *Airflex* CLUTCH

POWER CONTROLLED BY AIR



NEW! P&H DIRECTRON CONTROL

— the simplest, smoothest, most efficient control ever applied to an electric shovel

America's open pit mines and quarries have long felt the need for better electric shovel control — for the simplification of motor and motor generator design, and auxiliary control equipment with its complicated relays, resistors, and switchboard panels.

Through years of research and development—P&H has perfected the revolutionary new Directron Control. Simpler, more direct, more dependable, this control overcomes maintenance problems and adds years to the life of all electrical equipment. It also adds substantially to digging time.

In addition, Directron Control provides the quick, velvety response for steady production and levels out the power peaks to reduce power line charges to a minimum.

Another development in P&H's sixty-year experience of applying electrical power to the movement of heavy loads, it is but one of many outstanding advancements found in the new P&H Electric Shovels. Write for complete information.

P&H ELECTRIC SHOVELS
4451 W. National Avenue
MILWAUKEE 14, WISCONSIN

HARNISCHFEGER CORPORATION
EXCAVATORS • ELECTRIC CRANES • ARC WELDERS P&H HOISTS • WELDING ELECTRODES • MOTORS

THE GREATEST FORWARD STEP IN ELECTRIC SHOVEL DEVELOPMENT

SHAFER NORMAL & STANDARD DUTY PILLOW BLOCKS

For the major bearing needs of Industry

THERE are thousands of applications in industry where Shafer Normal Duty and Standard Duty Pillow Blocks provide the final and complete answer to power transmission problems.

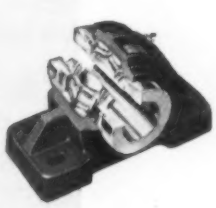
Shafer Normal Duty units readily meet the needs of moderate shock loads, with radial and/or thrust loads and ordinary conditions of dust and dirt. They have a single drive collar on an extended inner race and have efficient labyrinth seals.

Shafer Standard Duty units are designed for heavy duty service or for ordinary installations where generous reserve capacity is required. These handle radial, thrust or combined loads, and heavy shock loads. They have two square drive collars on inner race extensions, and piston ring seals to protect the units against dirt, dust and moisture conditions.

Both Normal and Standard Duty Pillow Blocks are equipped with the famous Shafer ConCaVex Self-Aligning Bearings. This exclusive Shafer design proved for all time by 25 years of service in the toughest installation imaginable provides not only the inherent self-aligning and free-rolling characteristics of a ball, but the load bearing capacity of a roller. In addition, the heavier the load, the greater the bearing surface that comes into play. You do not know the limits of anti-friction bearing performance until you know Shafer ConCaVex Bearings . . . combining the best features of *both* the ball and the roller. SHAFER BEARING CORPORATION, 1434 West Washington Blvd., Chicago 7, Illinois.

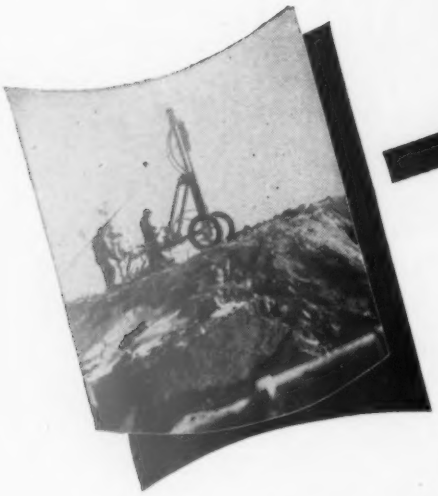
The Basic Shafer Idea

Shafer ConCaVex Self-Aligning Bearings combine the advantages of both ball *and* roller bearings. A Shafer Bearing utilizes the effective contact area of a ball many times its size . . . providing automatic end-thrust absorption, superior shock resistance and long life.



SHAFER CONCAVEX
SELF-ALIGNING BEARINGS
Reg. U. S. Pat. Off

SELF ALIGNING ROLLER BEARINGS



GETS THERE FASTER

SURE-FOOTED . . . highly maneuverable, Gardner-Denver Wagon Drills are easy to move over the roughest ground. For quarries, highway or construction projects, their easy portability speeds drilling.

SPOTS QUICKER

DOWN HOLES . . . toe holes . . . clean holes . . . —for any type of drilling, the quickly adjustable Gardner-Denver Wagon Drills make hole spotting simple. "Hole spotter" at bottom of feed permits spotting without difficulty.

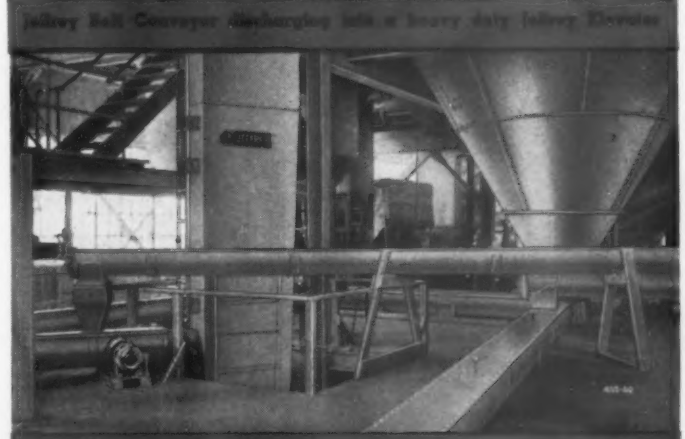
EXCEPTIONAL hole-cleaning ability . . . convenient control valve . . . fast, powerful drilling action . . . are other important advantages that make Gardner-Denver Wagon Drills preferred for so many drilling jobs. For complete information, write for descriptive bulletin. Gardner-Denver Company, Quincy, Illinois.

GARDNER-DENVER *Since 1859*

Rely on JEFFREY EQUIPMENT *for* UNINTERRUPTED PRODUCTION

This large marble quarry uses Jeffrey machinery extensively. Some applications are shown in the two views at the left

Jeffrey Belt Conveyor Discharging Into a Heavy Duty Jeffrey Elevator



Jeffrey Enclosed Elevators (three) and Spiral Conveyors (six)

Keeping production moving without a break is of vital importance if highest plant efficiency is to be maintained. Jeffrey maintenance items such as belt idlers, chains, elevator buckets, spiral conveyor flights and transmission machinery are safe insurance against costly breakdowns.

Other Jeffrey Equipment for the Rock Products Industry includes Crushers and Pulverizers, Vibrating Screens, Feeders, Weigh Feeders, Apron, Pan and Drag Chain Conveyors, Sand Settling Tanks, Bin Valves, Car Pullers, Portable Loaders, Unloaders and Stackers—a complete handling service from raw material to finished product. For large productivity and low maintenance costs . . . specify Jeffrey.

THE Jeffrey MANUFACTURING CO.

917-99 North Fourth Street, Columbus 16, Ohio

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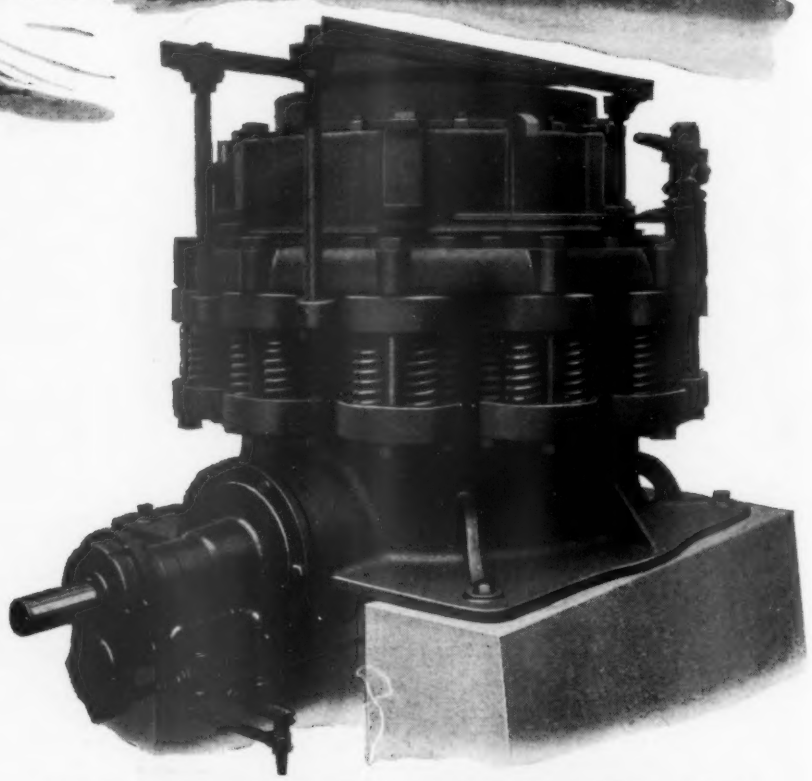
6 CONES SERVE THE KENTUCKY STONE COMPANY

There are two Symons Cones in the crushing plant at Russellville—a 3 foot Short Head and a 4 foot Standard.

IN the widespread operations of the Kentucky Stone Company, fine crushing at the various quarries of this company is being done with six Symons Cones of the 3 and 4 foot sizes in both Standard and Short Head types. Among the 3 foot Cones is an early built machine which has been in operation over eighteen years. That Symons Cones should continue to be chosen for fine crushing of the company's expanding operations is evidence of the satisfactory service which these crushers have given. This is one more of the many progressive producers of crushed materials that have continued to install Cones when increased output of more finely crushed products is required.



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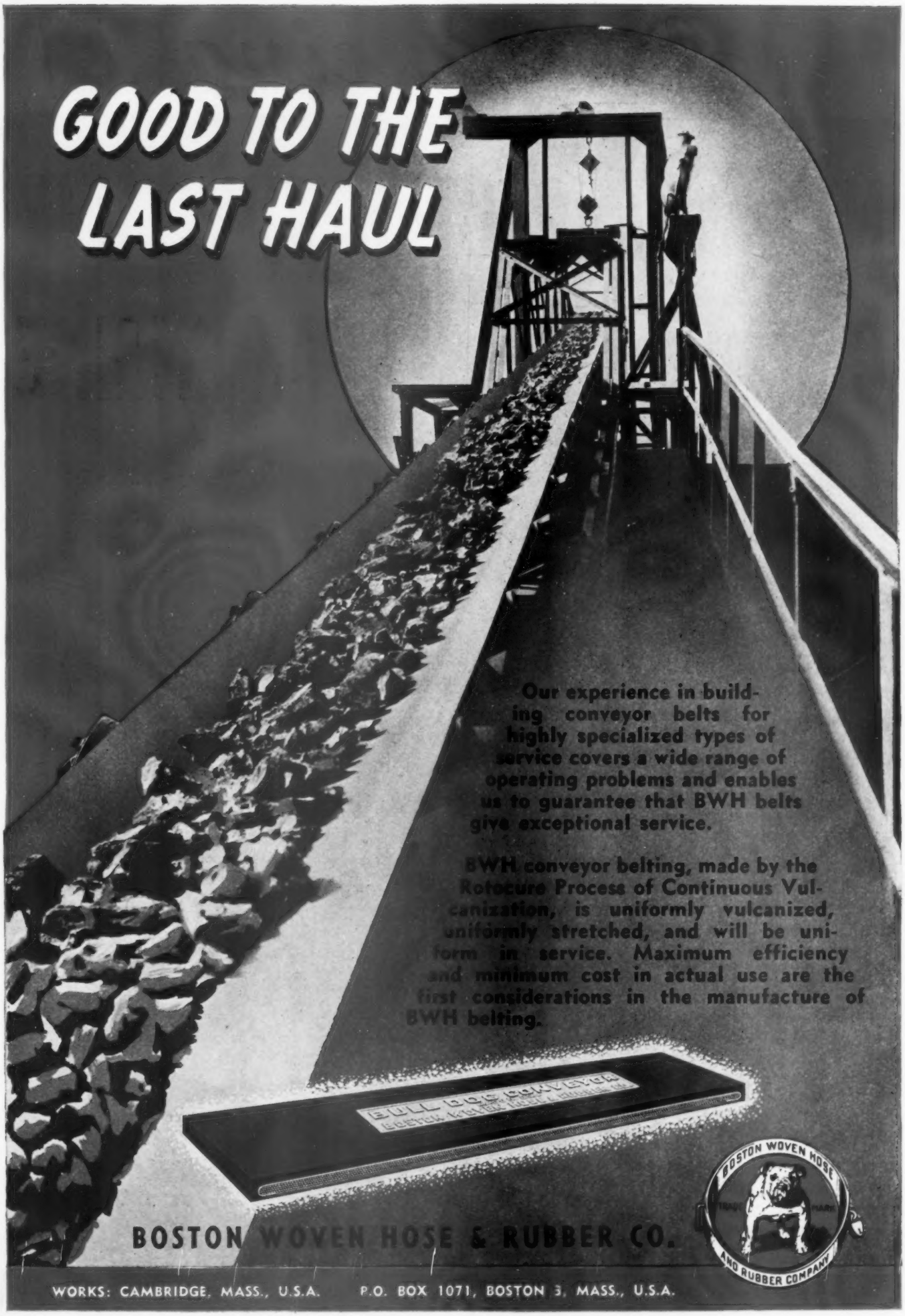
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Our experience in building conveyor belts for highly specialized types of service covers a wide range of operating problems and enables us to guarantee that BWH belts give exceptional service.
BWH conveyor belting, made by the Rotocure Process of Continuous Vulcanization, is uniformly vulcanized, uniformly stretched, and will be uniform in service. Maximum efficiency and minimum cost in actual use are the first considerations in the manufacture of BWH belting.
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BOSTON WOVEN HOSE & RUBBER CO.
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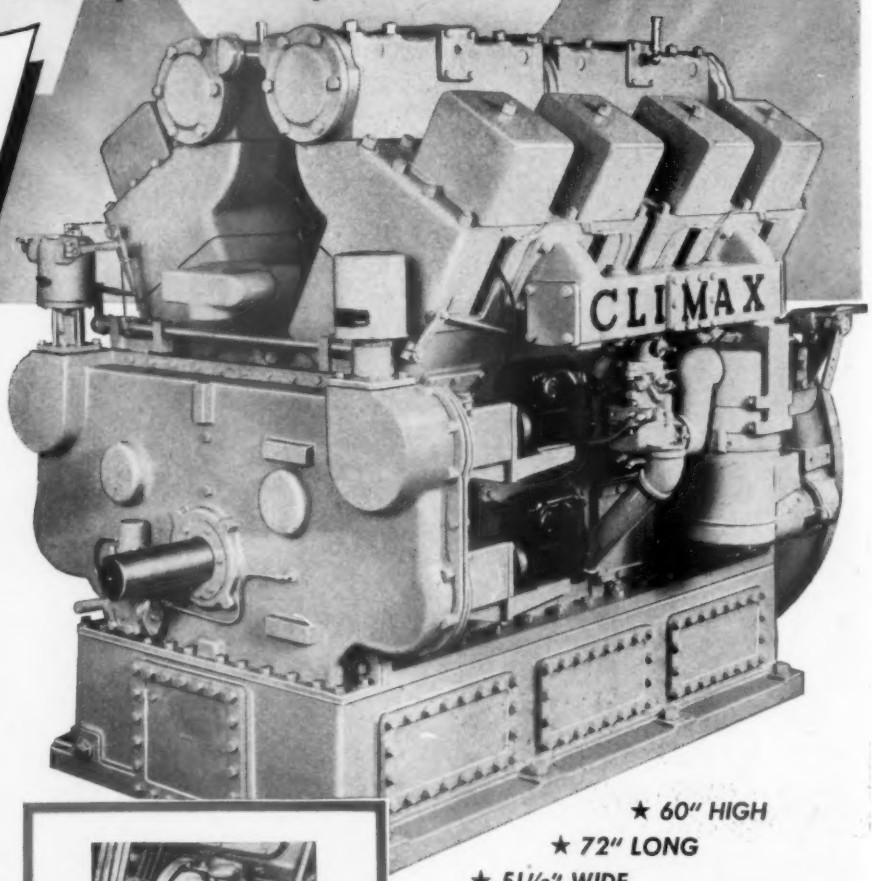
Climax Built-in Extras AT NO EXTRA COST!

1 *Hi-Power Blue Streak Combustion (exclusive).*

2 *Hi-Efficiency Dual Carburetion.*

3 PLUS *Staying Power—the ability to keep on doing the job.*



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This Climax valve-in-head Blue Streak V8 (8 cylinder, 4 cycle, 7" bore, 60°) Engine is a sturdy, instant-starting, fast-accelerating, smooth-running, flexible prime mover that operates on gasoline, butane, by-product or natural gas. It runs at slow, minimum-wear speeds, at low, safe temperatures in all climates on very little water.

This new V8 promises to sustain Climax Engine records of 7, 9, 10 years' trouble-free service—as much as 60,000 hours of continuous operation with no shutdown for repairs.

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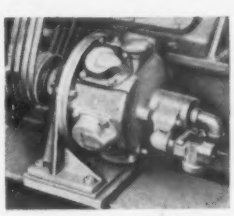

AIR START now available, belt connected or built-in, according to engine size, on all Climax Blue Streak Engines. Choice of air start or gasoline starting optional.

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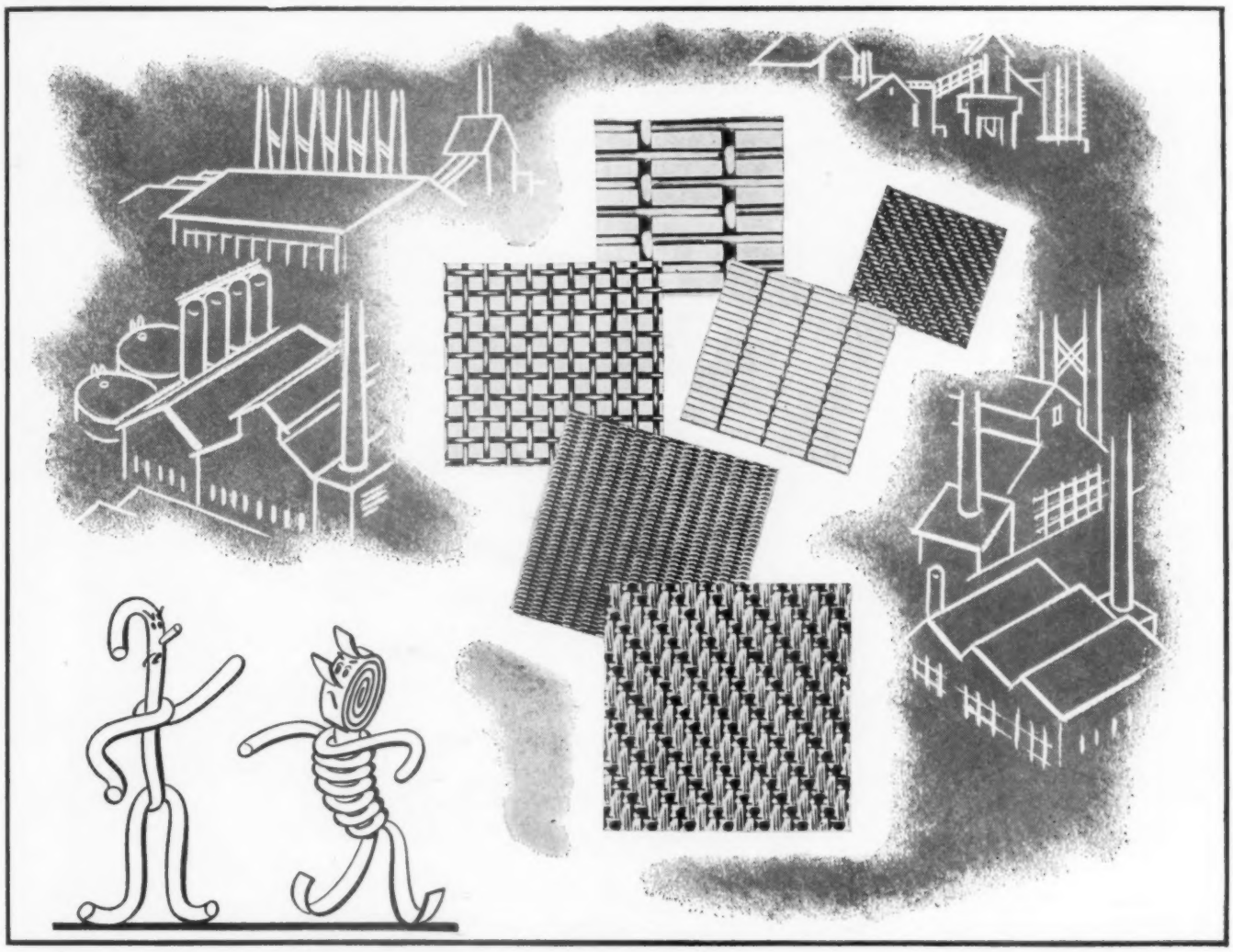
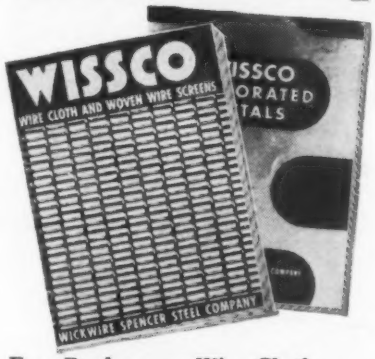
BLUE STREAK ENGINE
Builder of Climax DIESELS and GENERATING SETS

CLIMAX ENGINEERING COMPANY



Over 100 industries look to Wickwire Spencer for dependable wire cloth



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These profusely illustrated reference guides are filled with valuable technical information regarding proper selection and usage of wire cloth and perforated metals. For your copy of either one or both books, address Mechanical Specialties Division, Wickwire Spencer Steel Co., Sterling Street, Clinton, Mass.

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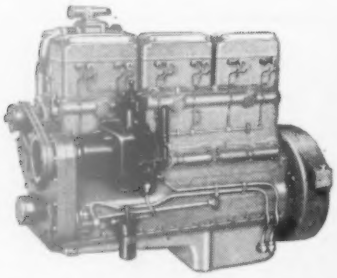

The six-cylinder, 150 hp. Model HBI-600 Cummins Diesel is a portable industrial version of the Model H engine . . . the *original* high speed diesel. It is designed for heavy-duty shovels, cranes and numerous other types of wheel and track mounted dirt moving or material handling equipment in the construction and aggregates fields.

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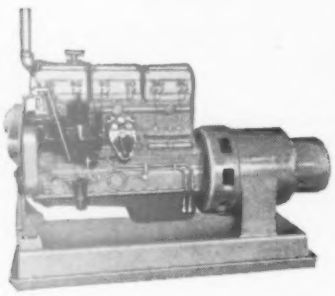

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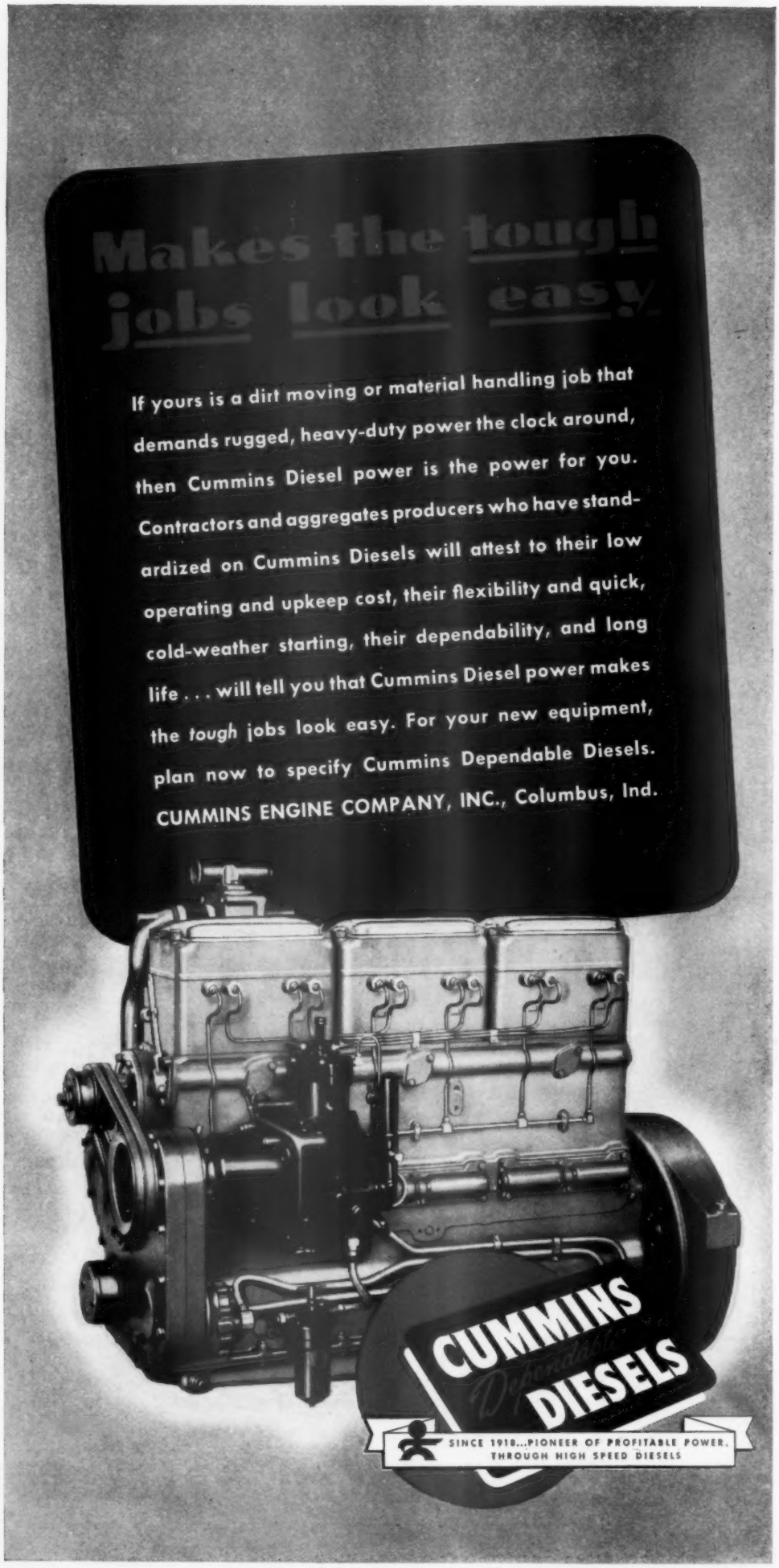
Makes the tough jobs look easy
If yours is a dirt moving or material handling job that demands rugged, heavy-duty power the clock around, then Cummins Diesel power is the power for you. Contractors and aggregates producers who have standardized on Cummins Diesels will attest to their low operating and upkeep cost, their flexibility and quick, cold-weather starting, their dependability, and long life . . . will tell you that Cummins Diesel power makes the tough jobs look easy. For your new equipment, plan now to specify Cummins Dependable Diesels.
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SINCE 1918...PIONEER OF PROFITABLE POWER. THROUGH HIGH SPEED DIESELS

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PIT AND QUARRY

FEBRUARY, 1945

Vol. 37 · No. 8

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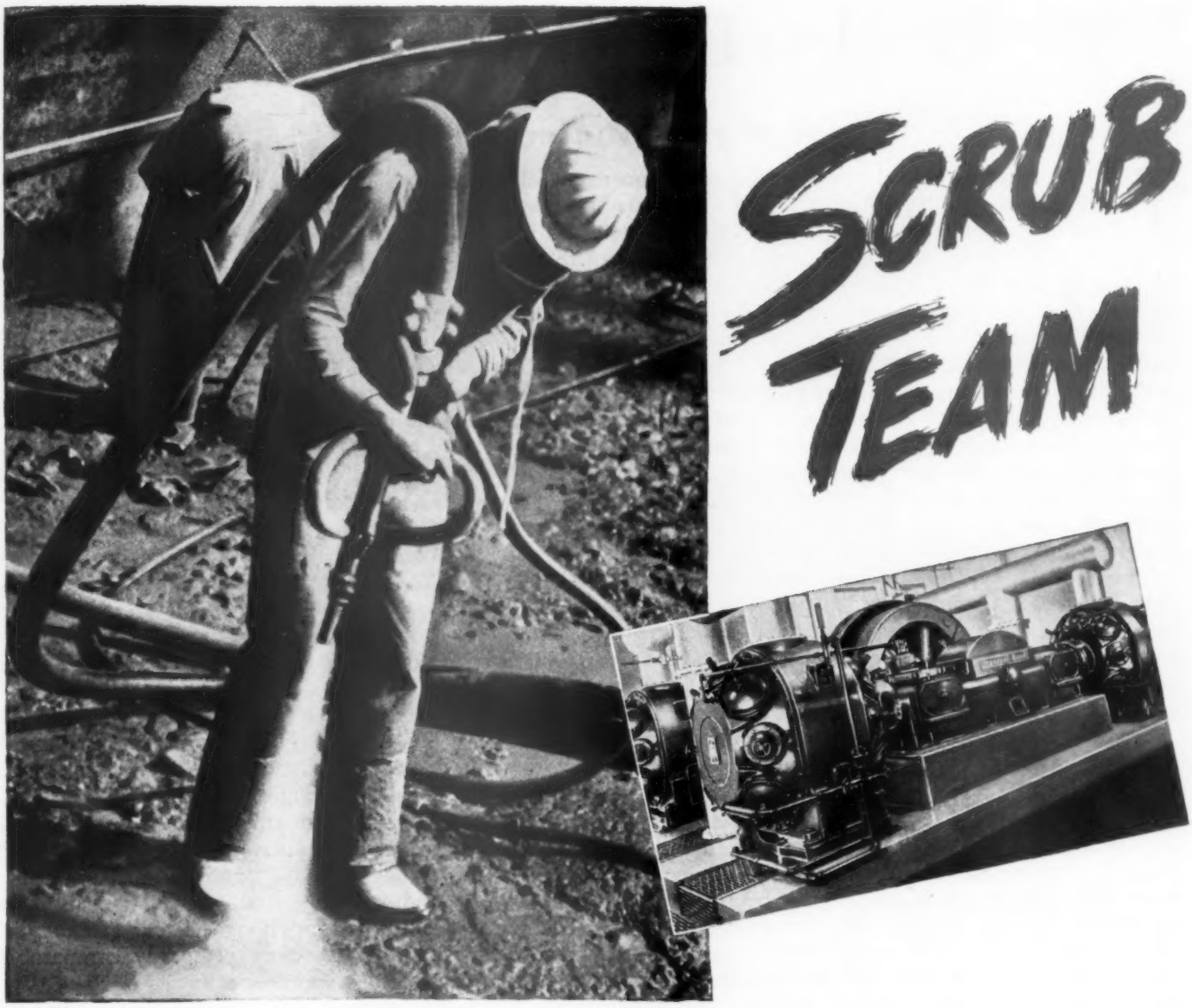

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THE USES of compressed air in war and peace are virtually unlimited. Mining and construction are everywhere speeded by air-powered drills, grinders, riveting hammers, chippers, hoists and other tools. In the picture, taken during the building of Grand Coulee Dam, you see still another use . . . compressed air teamed up with water to scrub a concrete surface.

Successful use of compressed air in industry depends on smooth functioning of both air compressors and tools . . . immeasurably aided by effective lubrication . . . Texaco.

Texaco Alcaid, Algol or *Ursa Oils* in air compressors, for instance, assure wide-opening, tight-closing valves, free piston rings, open ports, clear lines, continuous air supply. They also assure maximum service life between overhauls, fewer repairs and replacements. Their use in air compressors is world-wide.

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FOR ALL AIR COMPRESSORS AND TOOLS

TUNE IN THE TEXACO STAR THEATRE WITH JAMES MELTON SUNDAY NIGHTS ★ METROPOLITAN OPERA BROADCASTS SATURDAY AFTERNOONS

EDITORIAL

A Higher Minimum Wage

THE President's "hold-the-line" order of October 3, 1942, ordered the National War Labor Board to stabilize or "freeze" wages, except in those cases where increases were needed "to correct maladjustments or inequalities, to eliminate substandards of living, to correct gross inequalities, or to aid in the effective prosecution of the war." Since that time the board has moved hesitatingly, whenever it has moved, in the direction of correcting inequalities or eliminating "substandards of living," and as one result of this reluctance to deal with a problem that has grown in magnitude with every subsequent rise in the cost of living, Senator Pepper of Florida introduced his resolution which, if adopted, would declare it "the sense of the Congress that a straight-time hourly rate of 65 cents per hour is the minimum below which the National War Labor Board shall consider any wage substandard." Hearings on this resolution were held late in last November, but as more than two months have passed without either the resolution or the hearings having received much notice in the newspapers of the country, it may be safe to assume that not very many people know what transpired or what facts were brought to light.

If the 60,000,000 jobs, mentioned in these columns last month, are to be provided by private industry—as probably most people earnestly hope—it is obvious that there must be some important upward adjustment of the hourly earnings of large sections of the American people. Workers earning substandard wages are not good prospective customers for the manufacturers of automobiles, refrigerators, radios, and the like, which are so often cited as examples of the industries that will insure full employment after the war and the mass purchasing power that will follow from it. The mining industries may think of themselves as far removed from the employment and sales problems of those fields, but it is difficult to see how they can prosper for long without the establishment of the latter and many other industries on a sound footing, unless large sections of the mining industries, such as the producers of aggregates and the manufacturers of cement, are content to limit their future potentialities rather narrowly to government purchases—federal, state, county and municipal.

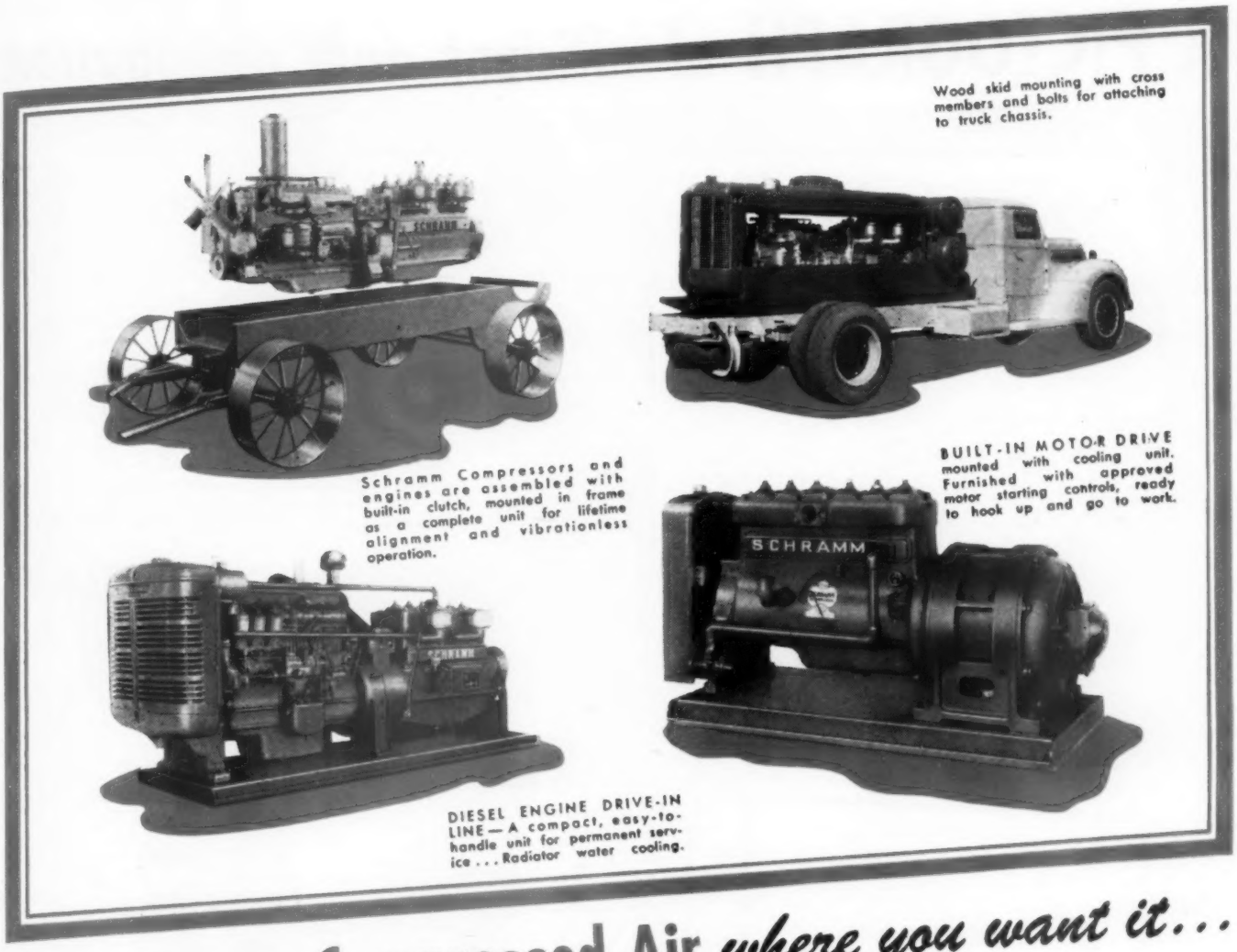
Let's look for a moment at Senator Pepper's resolution. It has been estimated by witnesses who testified at the Pepper committee hearings that at least 11,000,000 American workers, even under present war-time prosperity, are earning less than the 65 cents an hour he proposed. Of our present $200,000,000,000 annual production, more than half, or $105,000,000,000, it has been estimated, is due to war expenditures. When the war ends, this dollar-amount of annual production will have to be provided in peace-time goods and such military goods as may be needed to maintain a strong nation in security, even if we are to do no more than carry on this $200,000,000,000 annual production, which, in spite of its huge and unprecedented size, still leaves approximately 40 per cent. of the country's workers ill fed, ill clad and ill housed. To fill that $105,000,000,000 hole the increasing of all lower wages to the 65-cent-an-hour rate proposed would contribute no more than $5,500,000,000 in purchasing power.

Producers in the mining industries may derive some satisfaction from the knowledge that, according to testimony offered the Pepper committee, only 3 per cent. of their workers are earning less than 65 cents an hour, while in retail trade, at the other extreme, the percentage is 86.

Some years ago, in calculating the minimum income necessary for emergency living for a family of four persons, the Works Progress Administration arrived at the figure of $1,730 a year adjusted to to-day's prices. This emergency budget—intended only "for an emergency standard which may be necessary under depressed conditions" and which might prove "harmful to both health and morale" if persisted in too long—provided $751 a year for food for four persons, $214 for clothing, $201 for housing, $186 for household operation, $172 for miscellaneous, $44 for taxes, and $62 for war bonds. Pepper's proposed 65-cents-an-hour rate would provide an annual wage of only $1,352 for a full year of 52 44-hour weeks—a deficiency of 22 per cent. below the W. P. A. "emergency" standard for "depressed conditions." Certainly the Pepper resolution hardly seems to go far enough to aid materially in the provision of a peace-time prosperity comparable with that produced by war.

It has been estimated that the elimination of overtime in manufacturing industries would reduce their wage costs by $2,153,000,000 a year. Obviously industry's markets would be cut by a like amount, for people in low-income groups buy directly in proportion to their earnings. So, some new earnings, beyond the 65-cent minimum proposed, must be provided if present-scale purchasing power is to be maintained.

WHAT would the 65-cent-an-hour minimum cost in relation to profits? In the mining industries, according to other committee testimony, it would represent 1.1 per cent. of 1943 profits, as shown by corporate tax returns; in finance, insurance and real-estate industries it would amount to 6.85 per cent.; in manufacturing industries it would represent 7 per cent. Evidently a minimum could be set at a figure considerably higher than 65 cents and yet not make the cost as measured by profits too great for the gains as measured by purchasing power. The fact that Senator Pepper's proposal did not arouse more than a fraction of the opposition raised against the 40-cent-an-hour minimum suggested a decade ago shows that business men have progressed a long distance along the road toward a better understanding of their dependence upon one another and upon the purchasing power of the masses.


Wood skid mounting with cross members and bolts for attaching to truck chassis.
Schramm Compressors and engines are assembled with built-in clutch, mounted in frame as a complete unit for lifetime alignment and vibrationless operation.
BUILT-IN MOTOR DRIVE mounted with cooling unit. Furnished with approved motor starting controls, ready to hook up and go to work.
SCHRAMM
DIESEL ENGINE DRIVE-IN LINE—A compact, easy-to-handle unit for permanent service . . . Radiator water cooling.

How to get Compressed Air *where you want it . . .*

IN THE FIELD
IN THE SHOP
EMERGENCY CONSTRUCTION

There are so many jobs where compressed air is needed by quarries—and into this versatile picture fits Schramm Air Compressors. Schramm units—both portable and stationary—are extensively used by the utility field in general field service—steam plants—repair shops, etc.

They are compact, lightweight, and easy to start merely by pushing a button.

And they have these distinctive "under-the-hood" features: (1) completely water cooled to provide ideal performance both winter and summer (2) main bearings for every cylinder (3) mechanical intake valve (4) more cylinders and lighter parts (5) forced feed lubrication.

If you are not already using a Schramm, it will pay you to write today for illustrated bulletin AED-44.

SCHRAMM INC.
THE COMPRESSOR PEOPLE
WEST CHESTER
PENNSYLVANIA

A PICTOGRAPH *of efficient dust distribution*

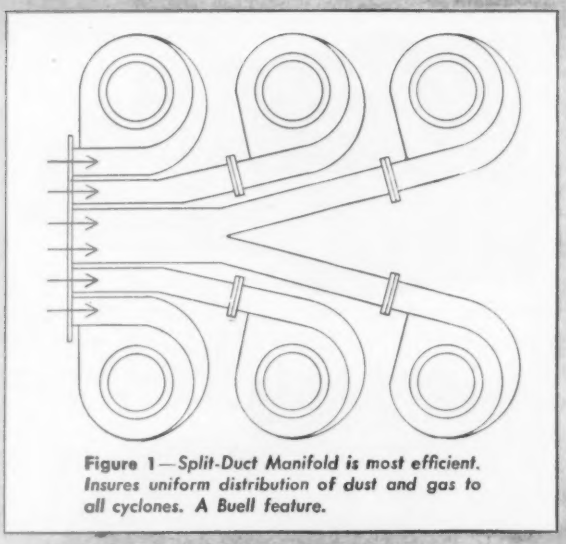


Figure 1—*Split-Duct Manifold is most efficient. Insures uniform distribution of dust and gas to all cyclones. A Buell feature.*

THE MOST EFFICIENT METHOD ***(Buell's)***

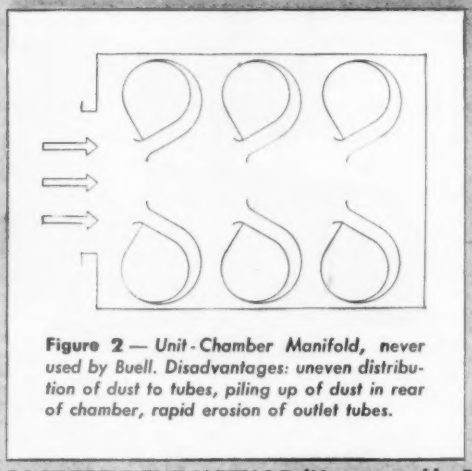


Figure 2 — *Unit-Chamber Manifold, never used by Buell. Disadvantages: uneven distribution of dust to tubes, piling up of dust in rear of chamber, rapid erosion of outlet tubes.*

THE LEAST EFFICIENT METHOD ***(Never used by Buell)***

Advantages of

BUELL (van Tongeren) CYCLONES

in

Industrial Dust Recovery Systems

Prepared under the direction of
The Buell Engineering Company's
Dust Testing Laboratory

BOTTOM VIEW OF MANIFOLD ASSEMBLY

Every engineer and operating executive should have a copy of the bulletin shown above as his guide in the selection of the right dust collection equipment.

Buell Design ELIMINATES CLOGGING MINIMIZES EROSION

The scientific development of inlet manifolding for multiple unit cyclone dust collectors has played an all important part in the uniform distribution of both gas and dust in cyclone collectors. ¶How proper manifolding is achieved in Buell Dust Recovery Systems is shown in the pictograph on this page. What happens when the dust load is not uniformly distributed, and how serious these disadvantages may be, is best described in the bulletin shown on this page, from which these two manifold sketches were taken.

buell
DUST RECOVERY SYSTEMS

BUELL ENGINEERING COMPANY, INC.
Suite 5000, 12 Cedar St., New York 5, N.Y.
Sales Representatives in Principal Cities

DESIGNED TO DO A JOB, NOT JUST TO MEET A "SPEC"

20 Cents Per Barrel Cement Increase for Nine Midwest States

Manufacturers of cement in the states of Wisconsin, Illinois, Indiana, western Kentucky, North and South Dakota, Minnesota, Iowa and eastern Missouri, have been granted an increase not to exceed 20 cents per barrel in their present maximum prices, the Office of Price Administration has announced.

The increase, which became effective January 8, 1945, applies to all types of Portland cement, except white cement, and includes masonry cement and other special types. The increased price may be charged where the sale is made f.o.b. a mill within the area, or on a delivered basis to a destination point within the area covered by the ruling.

Persons and firms reselling this cement without further processing may add to their present maximum prices the actual increased cost resulting to them from adjusted producers' ceilings.

A study of cost and other data of producers in the area indicates that this increase is necessary to meet the minimum requirements of law for this segment of the industry, which has materially diminished output, OPA said. It will cover adjusted total unit costs of the bulk of production which is needed (excluding the marginal high cost producers) to maintain minimum essential production.

Williams New President Nat'l Mineral Wool Ass'n

Edward I. Williams of Front Royal, Va., elected at the annual meeting in December, assumed his new duties as president of the National Mineral Wool Association on January 1. He succeeds T. C. Carter of Cincinnati.

Mr. Williams, a mining engineer who was graduated from Columbia University in 1914, has long been identified with the mineral wool industry. He is president of the Riverton Lime & Stone Co., Riverton, Va. He also serves as chairman of the Mineral Wool Industry War Council and industry consultant to the War Production Board. Previously he was president of the Industrial Mineral Wool Institute, Riverton, Va. He also serves as chairman of the Mineral Wool Industry War Council and industry consultant to the War Production Board. Previously he was president of the Industrial Mineral Wool Institute.

Boettcher Relinquishes Managerial Duties

The Ideal Cement Company of Denver has announced that Charles Boettcher, president and general manager, relinquished his duties as general manager, effective January 1, 1945. He will continue as president of the company; Cris Dobbins, formerly assistant general manager, will take over Mr. Boettcher's managerial duties.

Universal Atlas Plants Have Accident-Free Year

Two plants of the Universal Atlas Cement Company, United States Steel Corporation subsidiary, went through the calendar year 1944 without a lost-time or disabling injury, and are thus entitled to rewards of the Portland Cement Association's safety trophy. The plants at Leeds, Alabama, and Hudson, New York, earned this distinction notwithstanding added difficulties of wartime operation. It made the sixth time for Leeds and the third time for Hudson.

In compliance with the request of the Office of Defense Transportation, the Meeting of the Sand Lime Brick Association scheduled for February 7th-8th, 1945, at the Hotel Sherman, Chicago, Illinois, has been indefinitely postponed.

Richard A. Dittmar Is Appointed Chief Engineer of Atlas

R. A. Dittmar

Richard A. Dittmar, manager of the Hudson, New York plant of Universal Atlas Cement Company, was recently appointed chief engineer. He succeeds Sidney J. Robison, retired.

Mr. Dittmar, in charge of the Hudson plant since 1924, has been with the company 31 years, having started at the company's Hannibal, Mo., plant in 1913. His service at Hudson has been marked not only by engineering accomplishments in connection with the operation and the reconstruction of that plant but notably with the personnel program there. A graduate of Cornell University with the degree of mechanical engineer and a member of Tau Beta Pi, Mr. Dittmar is former chairman of the Cement and Quarry section of the National Safety Council.

Mr. Dittmar's successor as plant manager at Hudson is W. Scott Wilson, who has served there in various departments, and as assistant plant manager since 1923. He joined the company at the Northampton, Pa., plant in 1914 after studying mechanical engineering at Cornell.

Two Spokane Plants Expand Facilities

The Washington Brick and Lime Company is planning to expand its facilities at their two plants in Spokane, Washington, in step with an announced post-war expansion program, according to Howard Mausur, production manager of the company.

T. C. Powers to Head Cement Ass'n Research

Establishment of a basic research division of the Portland Cement Association, to be headed by T. C. Powers, has just been announced by Wm. M. Kinney, general manager of the association. Basic research being done at the association's Chicago laboratories and by the Portland Cement Association Fellowship at the National Bureau of Standards in Washington will be combined under the direction of the new Division.

"Our research program will be greatly strengthened by this consolidation of fundamental studies under one responsibility," Mr. Kinney said, "and in addition the new division will relieve Research Director McMillan and Laboratory Manager Gonnerman of considerable detail."

Mr. Powers, who now becomes manager of basic research, has been assistant to Director McMillan for a number of years.

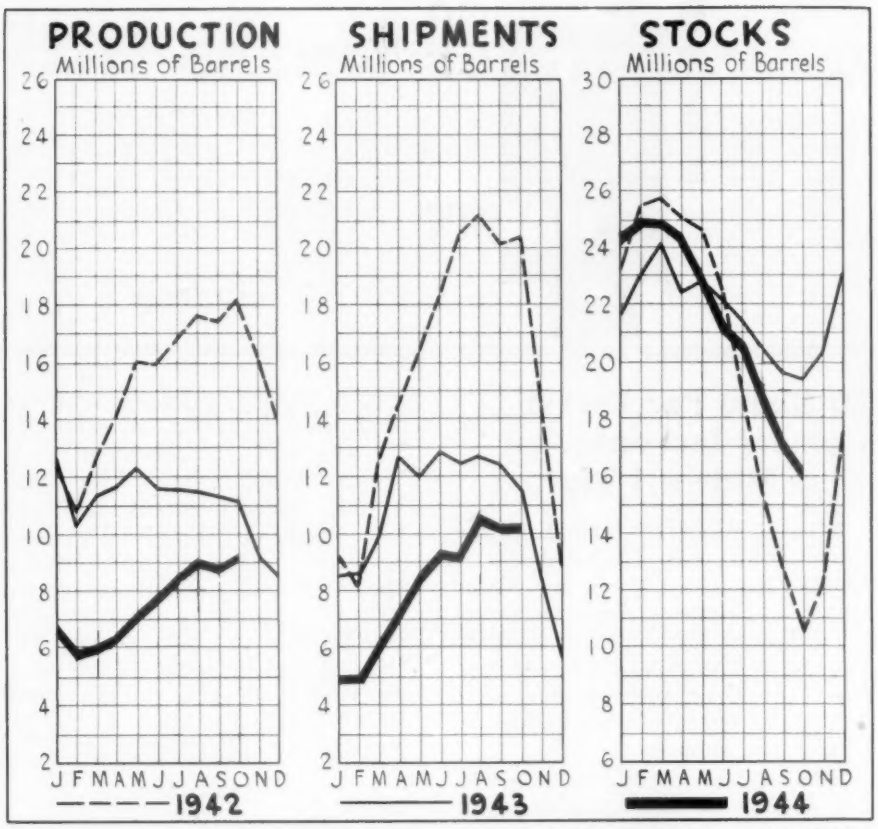
● New Cement Product

The Universal Atlas Cement Company has announced that its new product, Atlas mortar cement, is now ready for shipment from all the company's plants. It is described as the result of years of research including field studies, investigation of raw materials, laboratory tests and the development of manufacturing methods.

The object has been to produce a mortar cement which would be outstanding not only in some single essential but in all the characteristics desired by bricklayers, masons, and masonry contractors.

Johns-Manville Corporation has entered into an agreement with Asbestos de Mexico, S. A., of Mexico City, D. F., under which a new plant now being constructed by the Mexican firm will be operated under Johns-Manville management. The products marketed will bear the Johns-Manville trade-mark.

Post-war plans for Arkansas call for 2,400 miles of paving and road improvement to cost an estimated $80,000,000, according to W. W. Mitchell, highway department director. Of the total, projects costing $9,000,000 are completely planned and ready for contracts to be awarded as soon as material and funds become available.



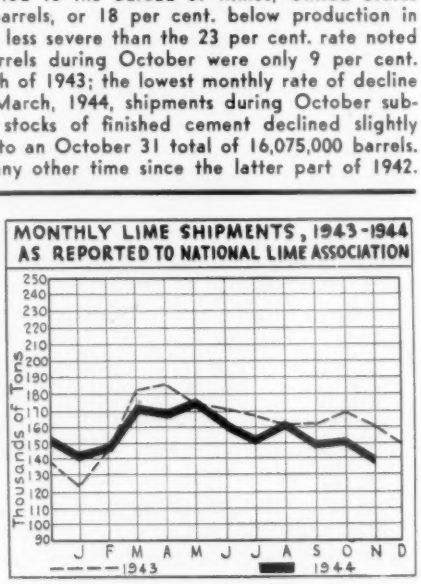
Output of cement during October, 1944, reported to the Bureau of Mines, United States Department of the Interior, totaled 9,194,000 barrels, or 18 per cent. below production in October, 1943. This monthly rate of decline was less severe than the 23 per cent. rate noted in September. Mill shipments of 10,263,000 barrels during October were only 9 per cent. below the movement from mills in the same month of 1943; the lowest monthly rate of decline since February, 1943. As in each month since March, 1944, shipments during October substantially exceeded production. Consequently, stocks of finished cement declined slightly more than 1,000,000 barrels from September 30 to an October 31 total of 16,075,000 barrels. The end-of-October stocks were lower than at any other time since the latter part of 1942.

Pittsburgh Glass Buys Coast Alkali Business

The Columbia Chemical Division of the Pittsburgh Plate Glass Company, in anticipation of greatly increased industrial activity on the Pacific Coast, has acquired the plant and sales organization of the Pacific Alkali Company, E. T. Aspludh, vice-president, has announced.

The Alkali Company has a plant at Bartlett, California, 220 miles north of Los Angeles, where it has been making soda ash, borax, and sesqui carbonate of soda, which includes a group of household and industrial cleansing agents.

H. K. Church, technical author and formerly district representative of The Euclid Road Machinery Company, recently joined the Brandeis Machinery & Supply Company at Louisville, Kentucky, taking over his new duties with this firm in January. The January issue of Pit and Quarry carried the concluding article of a four-part series by Mr. Church on "Off Road Haulage," in which field he is an acknowledged authority.



According to data collected by the National Lime Association, 55 companies in November, 1944, shipped 230,554 tons of lime (95,904 quicklime; 42,845 hydrate). Reporting companies represent 43.3 per cent. of the association members' total capacity of record. Based on PIT AND QUARRY'S estimates for the remainder of the industry, the total shipments for the month by all plants were approximately 576,000 tons. Shipments of lime by users for November, 1944, were:

Use	Quicklime (tons)	Hydrate (tons)
Agricultural	1,977	7,262
Building	8,057	12,604
Chemical	85,870	22,979
Total	95,904	42,845

Distributors Hold 26th Annual Meeting in Chicago

New officers and directors of the Associated Equipment Distributors elected at its 26th annual meeting held in Chicago, January 22, 23, 24: (Seated, left to right): F. B. McBath, executive vice president (Portland), H. O. Penn, president (New York), George N. Beckwith, vice-president (Pittsburgh), Hal M. Davis, vice-president (Houston, Texas), W. W. Bucher, treasurer (New York), Carol W. Winchester, executive secretary (Washington, D. C.). (Standing, left to right: John Gorman (Providence, R. I.), E. F. Higginbotham (Memphis), A. E. Hahnan (Atlanta), C. F. Halladay (Sioux Falls, So. Dak.), L. C. Basham (Charleston, West Virginia), A. F. Garlinghouse (Los Angeles), William T. Walsh (Cleveland), Boyd Dale (Newark, New Jersey), T. F. Just (Montreal, Canada), and Thomas N. Webster (St. Louis).

With more than 1,500 members and guests in attendance, the 26th annual meeting of the Associated Equipment Distributors convened on January 22 at the Edgewater Beach Hotel in Chicago. The packed sessions at the three-day meeting were focused to some extent on the post-war prospects and problems of the equipment industry, although there were every evidence that members of the association are still primarily concerned with their important role in the war effort.

H. O. Penn of New York City was elected president of the association at the opening session. He succeeds G. W. Van Keppel of Kansas City, Missouri.

"Ever since Pearl Harbor our members have been 'up to their necks' in the war effort, working with the Seabees, Army engineers and other service troops in supplying and keeping going the vast amounts of earthmoving and construction machinery needed in modern war," declared Mr. Penn. "We intend to keep at it, but can now do some planning for the future in order to stay in business, provide jobs for returning servicemen and protect the American way of private enterprise.

"At the end of the European phase of the war, which now seems closer than it did a few weeks ago, I believe there will be a six to eight month period of reconversion in our field, followed by a good business period. During that change-over time, surplus machinery will be bought up and distributed.

"The reason the postwar period looks good, is the great need of earthmoving and construction machinery. The railroads have vast plans for new grading, straightening curves, laying heavier track and additional track in yards and other projects which offers an extensive market. The thousands of airports and landing strips being planned either new or improved, create practically a 'virgin market' too. The public utilities have had to go several years without making improvements and they will be anxious to get going. Also road construction remains 'Number One' project in the postwar world and this of course has always been a field in which Associated Equipment Distributors play a prominent part. Also the various states alone have billions of dollars worth of postwar roadbuilding and other construction plans."

Concerning disposal of governmental surplus equipment, Mr. Penn said he believes "the government should not gamble against business and that bidding on such equipment should be done openly at all times, with sale of all surpluses handled through regular business channels.

"The vast amount of surplus equipment remains our major problem in 1945 as it was in 1944" he declared. "While we carry on in the war effort in supplying parts and service, we have to reach agreement with the federal government on such disposal if we are to remain in business and to be in a position to do our job in the great postwar expansion period."

Thomas W. Bacchus, Noted Powder Expert, Succumbs at Age 82

Thos. W. Bacchus

THOMAS W. BACCHUS, retired vice president and director of Hercules Powder Company, died recently at the Delaware Hospital in Wilmington after an illness of several weeks. He was 82 years old.

Mr. Bacchus resigned from Hercules in 1941, after 47 years of distinguished service in the explosives industry. Born in Sandback, Cheshire, England in 1862, the son of William and Sarah Wally Bacchus, Mr. Bacchus came to America in 1887, and went to work for the original Hercules Powder Company in Cleveland, in 1893, as a salesman. In 1894, he was transferred to the Chicago office of that company, and was later put in charge of their subsidiary organization for manufacturing nitroglycerin for oil well shooting.

When Hercules began its program of expansion to meet demands for military powder during the first World War, Mr. Bacchus directed the company's entire explosives production program.

During the 47 years he was identified with the explosives industry, he contributed many innovations and improvements in the manufacturing technique, and for many years he was recognized as the dean of the explosives industry.

He played an important part in establishing and shaping the policies which led to the growth of Hercules

J. H. Dixey Resigns to Form Consulting Practice

Joseph H. Dixey, first producer of ready-mixed concrete in New York City, has resigned his position as vice-president of the Transit Mix Corporation to engage in consulting practice in the field of ready-mixed-concrete plant design, construction, operation and related problems. For that purpose he has formed the Joseph H. Dixey Company with offices at 70 East 45th Street, New York. Mr. Dixey pioneered in the production of ready-mixed concrete in New York 18 years ago with the Ready-Mixed Concrete Corporation which was merged with other companies to form the Transit Mix Corporation.

WASHINGTON NEWS LETTER

IT IS a sign of these eventful times that not even the highly important military developments in both major war theaters during the past month were able to monopolize public attention. In addition to the inauguration of the fourth term, the month was marked by continuing heated debate in the Senate over United States foreign policy, the promulgation of stricter controls over the use of resources for non-war purposes, renewed administration pressure for the enactment of national service legislation, delivery of the fourth war-time Presidential budget to the Congress, and, more important than all, the intensive preparations for Mr. Roosevelt's participation in the highly strategic meeting of the "Big 3." The true complexity of some of the prize international political muddles which will have to be untangled by the triumvirate is now better appreciated by the general public than ever before, and there has been little tendency to underestimate the delicacy and difficulty of the President's role. Whether or not explicitly stated as such, one of the basic considerations in the discussions will undoubtedly be the future participation of the Soviet Union in the war against Japan. In this connection, the timeliness of the war leaders' meeting is evidenced by the fact that the declaration of intention of renewal or denouncement of the present non-aggression pact between Russia and Japan falls due only two months hence.

On the home front the President's unqualified insistence on a labor-draft law has brought this question, long simmering, to a boil. The heads of organized labor, as well as of such business groups as the National Association of Manufacturers, have indicated their strong disagreement both as to the necessity and the desirability of compulsory man-power service. It is well known, of course, that the stand of the administration reflects the repeated urging of Army and Navy chieftains, but it is not generally understood that the position of the proponents of the plan is based to a large extent on their fears as to the man-power situation after the downfall of Germany and before the final defeat of Japan. Official statements of added labor needs have been seriously questioned by labor and industry spokesmen, but, even under the official estimates, the number of men involved is less than one-half of one per cent. of the present industrial labor force. As the N.A.M. has pointed out, the recent drop in munitions employment has been due primarily to cutbacks in war contracts, rather than to an uncontrolled exodus from war industry. The adjustment of man-power ceilings by the War Man-power Commission, recent revisions of Selective Service regulations, and the wide publicity given to critical production programs have undoubtedly contributed much toward solving man-power problems and will continue to do so in the months ahead. If the War and Navy Departments were concerned only with the problem of meeting labor requirements for war production during the period of the two-front war, they might consider such measures more or less adequate, particularly in view of the fact that this is rather late in the war for the proposed legislation. There has been growing concern, however, that following the capitulation of Germany, an inevitable change in public war-psychology will result in a tremendous efflux of labor from war industry. This concern, combined with the increasing military conservatism as to what it will take to end the Pacific war, has led the armed forces to anticipate a relatively long period during which national service would be useful, and to seek iron-clad assurance that war needs will not only take precedence, but will also be met in full, so long as hostilities are in progress.

In the interest of focusing all attention on the war, publicity concerning reconversion and post-war planning is being soft-pedaled, but far from ignored. This is confirmed in the budget message, in which Mr. Roosevelt stressed the "unqualified priority" of war needs, but indicated the importance of advance policy planning, as indicated in the following excerpt:

"We must make sure that there are opportunities for new and growing business. The national and international policies which we adopt now, affecting trade, credit, investment, and competition and monopoly, largely determine future business and employment opportunities.

"We must develop the human standards and material resources of the nation, which in turn will tend to increase our productivity and most effectively support business expansion and employment. Our program should include provision for extended social security, including medical care; for better education, public health, and nutrition; for the improvement of our homes, cities and farms; and for the development of transportation facilities and river valleys. We must plan now so that these programs can become effective when man power and material are available."

An extremely provocative proposal calling for a novel approach to the problem of full employment is now before the Senate. The measure would require the President to submit annually to the Congress an employment budget as well as the regular fiscal budget; the former would indicate the estimated number of jobs and the volume of total national product needed during the ensuing year to assure full employment, and, if prospective business activity appeared unlikely to achieve this goal, would recommend a general program of investment and expenditure by the federal government which would be designed to bring employment and output up to the required level. The bill has been submitted by a Senate sub-committee for discussion purposes only, but is indicative of the viewpoint of a substantial bloc of legislators. The declaration of policy incorporated in the proposal is so direct and unequivocal as to be worth quoting:

"Sec. 2 The Congress hereby declares that

(a) Every American able to work and willing to work has the right to a useful and remunerative job in the industries, or shops, or offices, or farms, or mines of the nation.

(b) It is the responsibility of the government to guarantee that right by assuring continuing full employment; and

(c) It is the policy of the government to assure continuing full employment by (1) encouraging, to the fullest extent possible without federal investment and other expenditure, the highest feasible levels of employment by private enterprise, (2) providing whatever volume of federal investment and other expenditures may be needed to assure continuing full employment."

CEMENT CLINKER PRICES.—Sale of Portland-cement clinker was made exempt from price control effective November 30, 1944, the Office of Price Administration announced November 27.

Cement clinker is produced by most manufacturers incidental to the processing of cement, and when ground to certain specifications takes the form of finished Portland cement. The clinker is generally sold by producers who have an excess of the material to other cement manufacturers who supplement their own clinker supply when shortages occur. No increase in current prices of finished Portland cement will result from the exemption of clinker from price control, since the material is sold only to other cement companies whose prices for finished cement remain unchanged.

Prior to this action cement clinker prices were "frozen" under the General Maximum Price Regulation at March, 1942, "highs." Portland-cement ceilings, however, originally based on March, 1942, levels, have been increased in some areas of the country by the O.P.A. in amounts ranging from 10 to 20 cents a barrel.

Following the increases in Portland-cement prices, the industry filed applications with O.P.A. requesting corresponding adjustments in the prices of clinker.

Before the institution of price control, prices for sales of clinker were tied to the level of prices on finished cement. Any change in the price of the finished product was accompanied by some increase or decrease in the price of clinker, with the amount of change agreed upon by members of the cement industry.

Since the transfer of clinker between producers represents a relatively small segment of the over-all cement industry, and since present ceiling prices for finished cement will not be affected by the action, sales of clinker have been removed from price control.

(Amendment 86 to Revised Supplementary Regulation No. 1 to the General Maximum Price Regulation — effective November 30, 1944.)

CEMENT TYPE LIMITATIONS REVOKED.—Restrictions on Portland cement, which formerly limited manufacture to three specified types, were removed November 25 by the War Production Board through revocation of Order L-179.

When the order was originally issued in August, 1942, requirements for Portland cement for military and other essential construction work were unusually high and were expected to go higher. Total 1942 consumption was 185,000,000 barrels, the highest consumption figure on record. The order was designed to increase production of the three most commonly used types by prohibiting manufacture of modifications of these types. Other provisions of the original order, subsequently removed, had prohibited the earmarking of storage bins for individual customers. This restriction was intended to promote full utilization of all available storage space.

The total actual capacity of the cement industry is approximately 215,000,000 barrels per year, W.P.B. Building Materials Division officials stated. Consumption in 1944 will amount to an estimated 40 per cent. of this capacity (88,000,000 barrels); 1945 consumption, if present construction restrictions remain unchanged, is estimated at from 50 to 60 per cent. of capacity.

CONSTRUCTION MACHINERY.—Possible changes in control over construction machinery after "Victory in Europe" Day were discussed at meetings of the industry advisory committees representing motor grader, track-laying tractor, power crane and shovel manufacturers, and of the Over-all Construction Machinery Industry Advisory Committee, held in Washington the first week in December, the War Production Board reported December 5.

W.P.B. officials suggested that it would be possible to remove all present controls over the manufacture and distribution of construction machinery after the end of the war in Europe, and to provide only that up to 75 per cent. of the production of critical items and critical repair parts to be reserved for the military if they require it. Members of all four committees concurred, and recommended that such action be taken.

Limitation Order L-192, which controls the manufacture and distribution of construction machinery, now requires that producers manufacture under approved production schedules, or under specific authorization from WPB.

Currently, the military is taking approximately 75 per cent. of the over-all production, with 100 per cent. of the production of some items. Between 90 and 100 per cent. of all new cranes and shovels are now going to the military, 75 per cent. of the motor graders and 85 per cent. of the track-laying tractors.

Committee members reported that their chief difficulty during the year has been providing repair parts, especially those requiring castings and forging. Particularly critical at this time are engine parts for used construction machinery and equipment.

INSTALLING MACHINERY.—Interpretation 11 to Conservation Order L-41 (Construction) has been issued to clarify provisions governing building alterations that may be made in connection with installations of machinery or equipment permitted under Direction 2 of the order, the War Production Board reported December 2.

The interpretation states that the alterations which can be made without W.P.B. permission are only such as are directly required in connection with the installation or operation of the machinery or equipment being installed. Alterations not directly required in connection with the installation or operation may not be made under the Direction. For example, new walls or partitions may be put in where required for the operation of the machinery or equipment, but the installation of offices, office partitions, storage rooms, toilets, etc., are not permitted except by specific W.P.B. approval.

The interpretation further points out that the Direction does not limit the cost of building materials which may be used in connection with the installation of machinery or equipment to be used in a business designated on List A of Controlled Materials Plan Regulation No. 5; on Schedule I or II of CMP Regulation No. 5A; or in a business given priorities assistance by any P or U order for maintenance, repair or operating supplies. However, in the case of machinery or equipment to be used in any other business, the M.R.O. symbol and an AA-5 rating may be used to get $500 worth of materials for each installation or related alteration. The amount of unrated materials which may be obtained for such an installation is not limited by the Direction.

Processing or service machinery or equipment may be installed in an existing building regardless of how the equipment is obtained. However, building service equipment (plumbing, heating, lighting fixtures and the like) may only be installed when obtained by means of an approval on a special application form such as WPB-541, WPB-542, or WPB-1319. Building service equipment not obtained through approval of a special form may not be installed under Direction 2.

TRACTORS.—Prospective purchasers of new track-laying tractors are no longer required to submit to their suppliers original, certified or photostatic copies of their approved applications for purchase authorization, the War Production Board said December 18. After authorization has been received, a simple certification may be made with the purchase order if preferred, stating that the purchase is "authorized under Order L-53 on Form WPB-1319, Case No. —."

The change in procedure, effected by Order L-53 as amended by this change, standardizes procedures for all three of the construction machinery orders, L-192 (Construction Machinery and Equipment), L-53 (Track-laying Tractors) and L-53-b (Repair Parts for Track-laying Tractors), WPB said.

L-53 provides that new track-laying tractors may be sold or delivered only upon specific W.P.B. authorization.

CEMENT PRICES IN MIDDLE WEST.—Cement prices have been raised in eight middle western states by the following O.P.A. order.

PART 1346—BUILDING MATERIALS
(MPR 224, AMET. 9)
CEMENT

A statement of the considerations involved in the issuance of this amendment, issued simultaneously herewith, has been filed with the Division of the Federal Register.

Maximum Price Regulation No. 224 is amended in the following respects:

1. Paragraph (a) of 1346.104 is hereby amended to add immediately following the present subparagraph (1) (c) a new subdivision (d) to read as follows:

(d) The maximum price determined pursuant to the above pricing method may be increased by a manufacturer meeting the conditions set forth below by an amount not in excess of $0.20 per barrel when the following conditions are met:

The sale is made f.o.b. a mill located within the geographical area defined herein; or

The sale is made on a delivered basis and the delivered destination point is within the geographical area defined herein.

The geographical area referred to herein is defined to be the states of Wisconsin, Illinois, Indiana, and that portion of Kentucky west of and including the counties of Owen, Scott, Fayette, Madison, Rock, Laurel, and Whitman, the states of North Dakota, South Dakota, Minnesota, Iowa, and that portion Missouri east of and including the counties of Schuy, Adair, Macon, Randolph, Boone, Cole, Miller, Pulaski, Laclede, Wright, Douglas, and Ozark.

This amendment shall become effective January 8, 1945.

Issued this 3d day of January, 1945.

JAMES F. BROWNLEE,
Acting Administrator.

(F. R. Doc. 45-183; Filed, Jan. 3, 1945; 11:49 a. m.)

MICA PRICES.—The regulation governing ceiling prices of mica were amended to conform with a revision of a War Production Board conservation order applying to the commodity of the Office of Price Administration on January 2. The revised W.P.B. order, effective January 1, 1945, removes several grades from the strategic mica classification. It continues the exemption from price control for those grades of strategic mica which become nonstrategic January 1, 1945, as well as for fabricated mica produced from these grades. In addition, the amendment also exempts the relatively small amount of fabricated mica produced from grades of the raw material always classed as nonstrategic.

All strategic raw punch and sheet mica, as well as domestically produced non-strategic grades, have always been exempt from price control.

Although fabricated mica produced from strategic grades of raw mica was formerly exempt from price control, the product fabricated from non-strategic mica was subject to provisions of the General Maximum Price Regulation, with individual sellers' prices "frozen" at March 1942 "highs." The new amendment is expected to result in ultimate savings to industrial users of fabricated mica, since lower-quality fabricated mica will now become available for uses in which it is as serviceable as higher-cost fabricated strategic mica. If, contrary to expectations, inflationary prices should occur by reason of this amendement, O.P.A. will be prepared to terminate the exemption the agency said.

(Amendment No. 5 to Maximum Price Regulation No. 347—Mica—effective January 1, 1945).

REFRACTORY BRICK PRICES.—An increase of 3 per cent. in present ceiling prices of fire clay and silica refractory brick produced in the area east of the Mississippi River and in the state of Missouri was announced January 6 by the Office of Price Administration. The increase, which became effective January 8, 1945, applies directly to manufacturers' present ceilings, which are the highest prices individual producers had in effect during March, 1942, to each class of purchaser.

Jobbers and dealers purchasing the products affected by the new order are permitted to add to their ceiling prices the actual dollar-and-cent amount of increase resulting to them from the adjusted producers' prices.

The increase applies not only to fire clay and silica refractory brick, but also to ladle brick, sleeves and nozzles, runner brick, hot tops, super clay and high-alumina brick, ground fire clay, silica-cement and other low-temperature mortars.

Glass house brick, insulating fire brick, high-temperature bonding mortars, plastic fire brick, and castables are not covered by the amendment.

The refractory products effected by the increase are used in lining kilns and furnaces and for other purposes requiring materials able to resist high temperatures. Because of their close connection with industries that are highly essential in the war effort, the products are themselves critically needed in the production of war materials.

The increase is the minimum amount required by law to maintain prices that are generally fair and equitable for this segment of the building materials industry.

In quoting new prices to their customers as a result of the 3-per cent. increase, manufacturers are permitted, in accordance with customary industry practice, to round-off resulting prices to the nearest even 5 cents.

(Amendment No. 67 to Order A-1 Under Maximum Price Regulation No. 188—Manufacturers' Maximum Prices for Specified Building Materials and Consumers' Goods Other Than Apparel—effective January 8, 1945.)

TRUCK BATTERY CARE.—Truck operators are urged by the Office of Defense Transportation to make weekly check-ups of their storage batteries. The appeal was made in a maintenance bulletin calling for proper and regular storage-battery maintenance because of increased manpower and material shortages.

Storage batteries should be considered as a wearing part of an automotive vehicle since their useful life is limited. Batteries must be used and charged to be kept in operating condition and if merely left standing without charge, they will deteriorate until they become useless. Moreover, undercharged batteries are liable to freeze during severe winter weather.

The O.D.T. pointed out that battery dealers must check batteries on their shelves awaiting sale at frequent intervals to keep them in usable condition. The individual car owner can not store a new battery in his basement for six months or so and still expect to have a useful battery. Six months' storage without proper and frequent charging will produce nothing more than a hard rubber box full of lead and chemicals that are useless in so far as the storage of electricity is concerned.

Storage-battery maintenance suggestions made by the O.D.T. follow:

A. Lack of Water.—Water is lost as the result of charging and should be replenished as soon as the liquid level falls to the top of the separators. If water is not replaced and the plates become exposed, the acid will reach a dangerously high concentration that will char and disintegrate the wood separators, thus impairing performance of the plates. Plates can not take full part in the battery action unless they are completely covered by the electrolyte. Sulphuric acid need never be added to a cell unless spillage has occurred.

B. Loose "Hold-Downs." — "Hold-downs," or battery supports, if not properly adjusted allow the battery to bounce in the cradle. This will not only crack battery cases, but also do severe damage to the plates by causing the active material in the grids to drop to the bottom of the battery.

C. Overcharging.—A high generator charging rate burns up the plates and separators; and the violent gassing action forces the active material from the plates so that it collects in the bottom of the cell and thus is lost.

D. Undercharging.—A battery operated with insufficient charge over a long period of time may develop a coating of the plates, which will permanently reduce the battery capacity. In addition, a partially charged battery is liable to freeze during severe winter weather. Whenever the specific gravity of a battery tests 1.225 or lower, the battery should be recharged.

E. Battery "Dopes."—No satisfactory substitute electrolyte has been found for the simple mixture of sulphuric acid in water. Use no substitutes.

The O.D.T. recommended the following weekly storage-battery check-ups:

"Hold-down" clamps.—Check to see that they are tight and tighten if necessary to hold the battery secure.

Clean Top.—Note cleanliness of top of battery. Clean with baking-soda solution if necessary.

Battery Terminals.—Check for tightness of connections and any accumulations of corrosion. Clean terminals and grease to prevent corrosion.

Ground Strap.—Check condition of connections at battery and frame and tighten if necessary.

Water.—Add water if needed.

TRUCKS AVAILABLE.—Less than one-fourth of the motor trucks estimated as needed to meet essential war and civilian transportation requirements during 1945 will be produced and distributed to commercial operators, the Office of Defense Transportation has announced. The estimate is based on the 1945 civilian truck program approved by the War Production Board.

Increased demands by the armed services for all types of motor transport was given as the chief reason for the severe reduction. The total authorized program amounts to 186,792 light, medium, light-heavy and heavy-heavy trucks, or 24.1 per cent. of the O.D.T. stated requirement of 773,935 vehicles.

To emphasize the present and future increased needs of the armed services for more and more motor transport, the O.D.T. has pointed out that the approved 1945 program is also sharply reduced from previous allocations tentatively approved for the first six months of 1945. The final authorization is only four-fifths as large as the total of 235,905 trucks that earlier allocations made last summer and fall indicated as the possible 1945 schedule.

The O.D.T. also pointed out that the 1945 production schedule for medium, light-heavy and heavy-heavy trucks will be held to slightly below the current fourth quarter, 1944, rate of production. The total for 1945 in the final program in these sizes is 151,088. At the current fourth-quarter rate the total production would be 151,876 trucks.

The requirement estimate of 773,935 vehicles represents the number of vehicles required to meet the need for essential trucking transportation purposes. To obtain new vehicles truck operators must show that the vehicle will be used in operations directly related and necessary to the war effort or the maintenance of essential civilian economy.

In allocating a share of the total national production of trucks to O.D.T., the W.P.B. made the largest reduction in the number of light trucks authorized, the total, 35,704, being only 11.9 per cent.

(*Continued on page* 70)

Engineering and Post-War Problems Discussed at Annual Board Meeting of Nat'l Sand and Gravel Association

another ON THE SPOT report

IN LIEU of its usual annual convention, which this year was scheduled for January 23 to 25 at the Hotel New Yorker, New York, the National Sand & Gravel Association held its yearly board meeting there on January 22 and 23, with a joint session with the board of the National Ready Mixed Concrete Association on January 24. This action was taken in deference to the spirit of the request made by Economic Stabilization Director James F. Byrnes that all conventions scheduled to be held after January 31 be canceled. Although the decision to cancel the sand-and-gravel convention caused keen disappointment to many producers who had expected to profit by their contemplated attendance to an even greater extent this year than they had done in former years, those who were forced to make the decision felt that it was the right thing to do under the circumstances, and despite the fact that all convention travel has been said to constitute no more than one per cent. of the country's total railway passenger traffic.

Although the formal program had been prepared, printed and distributed to the association's membership and cancellation naturally destroyed the pattern that had been created by months of careful planning, it was possible, fortunately, to salvage some of the work that had been done. Thus, Robert Ash, Washington attorney specializing in taxation problems, was able to attend and present an interesting and informative paper on Excess Profits Tax relief Under Section 735. Also, Dr. Marcellus H. Stow, formerly deputy director and, since the resignation January 15 of Arthur Knoizen, director of the Mining Division of the War Production Board, was able to appear to offer counsel on the many problems that confront sand-and-gravel producers. Thus, although the original program had to be abandoned and attendance was naturally greatly reduced, there remained enough important and informative activities to hold the attention and interest of those present.

Mr. Ash presented a lengthy discussion of tax relief which can not be reprinted in extenso or satisfactorily summarized. His comments ranged over the various relief sections and the procedures to be followed in calculating the basis for seeking relief from the hardships imposed by the Internal Revenue Code of mining companies.

Industry Problems

Executive Secretary Vincent P. Ahearn repeated his earlier warnings regarding social-security taxes in the case of owner-drivers of rented motor trucks, referring again to the Grand Rapids Gravel Company case, in which the court decided that the company renting the trucks was liable for the truck drivers' social-security taxes, since these drivers were employees rather than contractors. He urged renters of trucks to ascertain whether the drivers of those machines are employees of the trucking contractor and whether their social-security taxes are being paid by their employer. He suggested that all renters of hired trucks treat the drivers of such machines as their own employees unless they know that they are on the pay-roll of the contractor and that the latter is paying their social-security taxes.

Mr. Ahearn read a letter received from Director Stow of the Mining Division of the WPB wherein the writer enumerated four serious problems that continue to confront the mining industry: (1) Man power; (2) truck tires (only mining companies producing molding sand or fluxing stone are in Group I for receiving truck tires); (3) fewer trucks will be available in 1945 than could be had in 1944 and the allocation of highway and off-the-highway trucks to the mining industry has been seriously curtailed; and (4) tractors and shovels, which are still critical in 1945.

Mr. Ahearn suggested the use of the WPB's Regional Technical Advisors of the Mining Division when buying new capital equipment valued at more than $500 using form WPB-1319. In the first quarter of 1945, he explained, the mining industry gets an MRO AA-1 rating 120 per cent. of its MRO purchases made in the same quarter of 1943. The need for new equipment must be justified, and it is not difficult to get approval for purchase if the need is genuine and the work to be done important. The National Sand & Gravel Association will help producers in their applications for new equipment, he said. With the exceptions noted above — molding sand and fluxing stone—the mining industry is in Group 3 when truck tires are to be purchased.

Price Relief

In discussing price relief through the Office of Price Administration, Mr. Ahearn said that the right to increase prices had been granted in about ten areas. Formal application for exemption of the sand-and-gravel industry from all price regulation has been filed with the OPA by the association by asking for its removal from the list of price-controlled commodities. The public's interest is believed to be fully protected by normal competitive practices in the industry. Pending action on the application for exemption, producers seeking relief from price control should continue to make applications jointly on an area or regional basis rather than as individual companies. Here, too, the association will assist members.

Mr. Ahearn reminded his audience that the OPA can punish violators of its orders by revoking the licenses it grants to do business or can invoke penalties on the basis of the amount of the sale involved plus twice that amount.

Manpower Situation

He said that the industry's manpower situation is serious because the War Manpower Commission has not marked it as essential. Local Manpower agencies have raided or threatened to raid sand-and-gravel producers' organizations for war-plant workers. In some areas, the speaker said, the sand-and-gravel industry has been recognized as "lo-

cally needed." Northern and southern California, Washington, D. C., and Ohio (with respect to railroad ballast) have been so classed for man-power allocation.

Mr. Ahearn warned his listeners that men under 30 who can pass the physical and mental tests will be taken by the military services, regardless of where they work, even from an airplane factory. He repeated that there is as yet no law which empowers the WMC to take workers from the sand-and-gravel industry for employment in another industry.

Technical Activities

Stanton Walker, the association's director of engineering, reported on the organization's research and other technical activities. He mentioned his service on more than 30 technical committees or subcommittees to show the wide range of industry problems covered by the association's work. He referred briefly to his recent trip to the Pacific Coast, where large meetings of sand-and-gravel producers and state and federal engineers were held as reported in a later issue of PIT AND QUARRY. He spoke also of the work being carried on at the research laboratory of the National Sand & Gravel Association Research Foundation at the University of Maryland and to the fact that the University's building program, prepared for submittal to the state legislature, includes provision for that work.

President Robert Mitchell then called for the presentation of the safety awards given each year to the two plants with the best safety records. The first award was given to the Pittsburgh river plant of the Dravo Corporation and the second to the Chattanooga plant of the Dixie Sand & Gravel Company.

Bituminous Binders

Bernard E. Gray, general manager of the Asphalt Institute, invited to attend as a guest, contributed some interesting information on the subject of bituminous binders and mixtures in the form of questions asked by producers who were present. He said in part that not much bituminous pavement could be laid without the use of natural sand as in many areas it is the only kind of sand economically available. The Asphalt Institute, he said, is studying all kinds of aggregates throughout the United States in an effort to find the best and most economical.

Mr. Gray mentioned as important problems in the preparation and use of bituminous mixtures: (1) the use of aggregate without drying it to 1 or 2 per cent. moisture, and (2) stripping. He believes that more progress will be made in the prevention of stripping by treating the aggregate than by treating the asphalt, as some aggregates require much treatment, some little and others none and it would be unwise to treat all asphalt rather than the few aggregates. He believes, too, that treatment of the aggregate, which costs as much as $1 a ton with some patented treatments, would become cheaper under the pressure of competition.

He stated, also, that although road mixing is still prevalent, there is a definite trend toward plant mixing. He mentioned the farm as an important present and more important future market for bituminous-concrete pavement for barn floors, feeding lots, etc. He said that whereas years ago an asphalt mix of equivalent strength was much more expensive to produce than a 1:2:4 concrete mix, the cost of the former is now less than that of the latter.

New Officers

The Tuesday afternoon meeting was presided over by President Robert Mitchell (Consolidated Rock Products Company, Los Angeles). H. V. Owens (Eastern Rock Products, Inc., Utica, New York) then read the report of the nominating committee which proposed for re-election Robert Mitchell as president, and as new officers: R. N. Coolidge (Cumberland River Sand Company, Nashville) for vice-president; and H. N. Snyder (Buffalo Slag Company, Inc., Buffalo) as secretary and treasurer. These nominations are to be submitted to the membership for letter vote within 30 days.

Mr. Mitchell then read the names of members who died during the year and a rising tribute was paid to them. Those listed were: Henry N. Battjes (Grand Rapids Gravel Company, Grand Rapids, Michigan); B. V. Hedrick (B. V. Hedrick Gravel & Sand Company, Lilesville, North Carolina); P. J. Yaker (River Sand & Gravel Company, Owensboro, Kentucky); R. S. Spaulding (Fordyce Gravel Company, San Antonio); C. Barney Ireland, (Birmingham Slag Company, Birmingham); George Vang (Iron City Sand & Gravel Company, Pittsburgh).

Strength of Concrete

Stanton Walker, director of engineering, then read his paper on The Flexural Strength of Concrete. This is the latest of a long list of authoritative discussions dealing with this subject since 1885 and was prepared to "help to clarify in the minds of sand-and-gravel producers the significance of flexural strength of concrete and some of the factors which affect it." Because of the wealth of information in this article and the many references and charts involved no condensed report could do justice to it. A brief report follows and the complete paper will be published in a later issue of PIT AND QUARRY.

According to Mr. Walker concrete is relatively strong in compression and weak in tension. In reinforced-concrete members steel reinforcing is used to resist tensile stresses but in concrete pavements the concrete must resist tensile stresses as the steel is used only to control shrinkage cracks and tie together portions of the slab when cracks develop. He then briefly described the sources of the principal stresses in a concrete road slab which make tensile strength important. Because of the difficulty of making direct measurements of that property, said Mr. Walker, tests of beams in flexure are depended upon for the most part.

He stated that "flexural and tensile strengths are dependent on the quality of the concrete in much the same way as compressive strength, except that they appear to be more sensitive to certain characteristics of the aggregate, particularly the coarse aggregate, than compressive strength." The major variables in concrete proportioning — water-cement ratio, cement content and size and grading of aggregate—are factors which affect both flexural and tensile strengths in the same direction as they affect compressive strength, although at a lesser rate. Angularity of the coarse aggregate, said Mr. Walker, has a negligible effect on either the compressive strength of the flexural strength of concrete. A factor of considerable importance to the flexural strength, but with little effect on the compressive strength, he said, is some not-too-well-understood characteristic of the surface of the coarse aggregate which affects the bond with the mortar.

The strength of the coarse aggregate is of little significance to the tensile strength of concrete or to its compressive strength since most aggregates are stronger than either the mortar or the bond with the mortar. There is, however, a reasonably good relationship between the wear and strength, according to

Mr. Walker. Tests show, he said, that the flexural strength of concrete appears to be a more significant measure of the deterioration of concrete than compressive strength.

Reemploying Veterans

Mr. Ahearn then briefly summarized the paper Readjusting the Veteran to Civilian Life which was originally scheduled to be presented at the Thursday morning joint session of the gravel and concrete associations by Major General Lewis B. Hershey, director of the Selective Service System. In this paper it was pointed out that when the Selective Service and Training Act was passed in 1940 it provided two main responsibilities for that body—the selection and induction of the required manpower into the armed forces, and the selection of these men with the least possible disruption to essential industry and agriculture.

Now, after more than four years of operation of the Selective Service System, said General Hershey, men are being demobilized at the rate of about 50,000 per month and returned to civil life. This has made increasingly important another responsibility of the system, that of replacing in their former positions of, or in securing positions for these men, a function of the Veterans Personnel Division and of the Veterans' Placement Service Board which was created by the "G. I. Bill of Rights," passed by Congress in 1944.

Congress recognized the reemployment problem as having two aspects: (1) The veteran who wants his old job back, and (2) the veteran who never had a job, who does not want the one he did have, or whose job has disappeared since he went away. In carrying out the second aspect, said General Hershey, the services of these government agencies are being utilized. For the veteran in the first aspect the law provided that "he is entitled to reinstatement in his former position or in one of like seniority, status and pay, provided: (1) Such a position was in the employ of a private employer, the U. S. Government, its territories or possessions, or the District of Columbia; (2) such position was not a temporary one; (3) he left the position subsequent to May 1, 1940, to enter upon active military or naval service in the land or naval forces of the United States; (4) he satisfactorily completed his period of training and service and received a certificate to that effect; (5) he is still qualified to perform the duties of such position; (6) he makes application for reemployment within 90 days after he is relieved from service; and (7) if such a position is in the employ of a private employer, the employer's circumstances have not so changed as to make it impossible or unreasonable to reinstate the veteran to such position or to a position substantially equivalent in every respect."

Other provisions provided by law are that when he goes back onto the pay roll, "that: (1) he shall be considered as having been on furlough or leave of absence during his period of service; (2) he shall be restored without loss of seniority; (3) he shall be entitled to participate in insurance or other benefits offered by the employer pursuant to established rules and practices relating to employes on leave of absence or furlough in effect with the employer at the time such person entered military or naval service; and (4) he shall not be discharged from such position without cause for one year after restoration."

Mr. Ahearn expressed his confidence that producers will co-operate with this law to the best of their ability but added that the law provides for legal procedure as a last resort if any obstacles do arise which impede its proper functioning and that new laws will be passed if necessary to remove these obstacles. He suggested that the board of directors appoint a committee on reinstatement problems to help the industry carry out the spirit of the law and this was done.

Labor Relations

Mr. Ahearn then also suggested that the gravel and concrete associations appoint a joint committee on labor relations which could give all members sound advice on conditions in other territories whenever a labor-union problem arises. He reminded those present that in connection with the wage-and-hour law effective in 1938 a ruling was made in 1939 that producers are not subject to the provisions of this law unless their products physically cross a state line. Some efforts are now being made, he said, to show that, if these aggregates are used in bridges, highways or other structures over which interstate traffic passes, the producers of these aggregates come under the provisions of this law. Mr. Ahearn also said that these industries are not a part of the construction industry but are covered by Executive Order No. 9240. He then cited several cases in which the National War Labor Board upheld this ruling.

In closing Mr. Ahearn again invited producers to ask for help on any of their labor problems as no producer need be at a disadvantage in dealing with a collective bargaining proposal because of his unfamiliarity with practices in other parts of the country.

Mr. Mitchell endorsed Mr. Ahearn's remarks with the statement that co-operative united action is necessary if each problem is to be decided on its merits.

A message was then read from Otto S. Conrades, a director and past president, inviting the association to hold its 1946 convention in St. Louis. It was decided to withhold any action on this subject until later in the year when the war developments may clarify future plans.

Business Outlook

At Mr. Mitchell's request directors from various sections of the country reported briefly on the 1944 business and 1945 prospects in their territories. These reports indicated that in the east and east central sections business was down considerably in 1944 and a further drop is expected in 1945. The volume of 1944 business seems to have been about half that of 1943 and a further drop of 30 to 40 per cent. seems likely. The reports for these areas were made by Paul P. Bird (Boston Sand & Gravel Company, Boston); H. F. Garvin Pelsue (Metropolitan Sand & Gravel Corporation, New York); Alexander Foster, Jr. (Warner Co., Philadelphia); and Stephen Stepanion (Arrow Sand & Gravel Company, Columbus, Ohio).

In the western states business was much better and the future prospects are more promising. According to A. R. Shiely (J. L. Shiely Company, St. Paul), business in 1944 was over that of 1943 and there is more business on the books now than there was a year ago. There is a possibility, he said, that a shortage of labor in this area will hold down the construction of planned projects and the production of the aggregates for them.

T. E. Popplewell (Fort Worth Sand & Gravel Company, Inc., Fort Worth, Texas) said that business in his area fell off in the first half of 1944 but improved considerably in the last half and that his upward trend is expected to carry over into 1945.

Eric W. Ryberg (Utah Sand & Gravel Products Corporation, Salt Lake City) reported that business was good in 1944. The mining in-

(*Continued on page 78*)

44 States To Match Federal-Aid Quotas of Post-War Highway Bill

A SPECIAL survey made by the American Association of State Highway Officials discloses that federal-aid authorizations provided in H.R. 4915, the post-war highway bill (since signed by the President December 20 as S. 2105), can be matched by at least 44 of the 48 states within the time allowed through normal financing methods, and without increases in present highway tax rates. Two states have not yet responded to the association's questionnaire. This finding definitely rules out unofficial speculation to the effect that 30 states would be unable to finance the contemplated highway program.

The association directed its inquiry to the highway departments of these 30 states, and of the 28 which thus far have replied, only one—Colorado—reports it is considering an increase in taxes because of its inability to take up the full apportionment of federal funds within the time permitted.

The earlier speculation concerning the 30 states was based on estimated motor-vehicle revenues in 1945, 1946 and 1947, and apparently had incorrectly assumed that all the states would take up the federal funds during those three calendar years. Actually, only nine of the 28 reporting plan to do this, with four states spreading the program over four years and six over five years, as provided by this type of highway legislation. (The remainder did not indicate their financial programming by years. A state obligates its federal-aid grant by signing a project agreement. The letting of contracts and actual construction work then follow in due course, usually requiring one or two years more.)

Another misconception dispelled by the survey is that all states which are unable to finance their share of the program entirely from current revenues assigned by statute to state highway use would be compelled to seek additional taxes. The survey shows that 34 states (including the 18 whose ability to match is not questioned) do plan to meet their share of the program entirely from current revenues available to the state for that purpose. But in four others bond issues will be used, and already have been authorized, while nine states report that contribution of funds from local units of government will be available for matching purposes. Both are long-established methods of financing ca-

ESTIMATED ABILITY OF STATES TO MATCH THEIR FEDERAL-AID APPORTIONMENTS UNDER H. R. 4915—PART I

(American Association of State Highway Officials)

State		Amounts (000 omitted) by Years					Will It Be Necessary To Issue Bonds?	Local Contributions	
		1945	1946	1947	1948	1949		Amount (000 omitted)	Percentage of Total Receipts
Alabama	Apportionment	$10,406	$10,406	$10,406			No	$17,390	36.7
	Matching funds required[1]	6,937	10,406	10,406					
	Amount to be obligated	10,406	8,000	10,000	$ 2,812				
	Matching to be provided	6,937	8,000	10,000	2,812				
Arkansas	Apportionment	8,186	8,186	8,186			No[5]	1,540	3.7
	Matching funds required[2]	5,457	8,186	8,186					
	Amount to be obligated	4,912	4,912	4,912	4,911	$ 4,911			
	Matching to be provided	3,274	3,821	4,912	4,911	4,911			
Colorado	Apportionment	7,757	7,757	7,757					
	Matching funds required[3]	4,115	5,933	5,933					
Delaware	Apportionment	2,438	2,438	2,438					
	Matching funds required[4]	1,625	2,438	2,438					
Georgia	Apportionment	12,231	12,231	12,231					
	Matching funds required[5]	8,154	12,231	12,231					
Idaho	Apportionment	5,114	5,114	5,114					
	Matching funds required	2,240	3,148	3,148					
Illinois	Apportionment	21,876	21,876	21,876			No	None	
	Matching funds required[6]	14,584	21,876	21,876					
	Amount to be obligated	21,876	21,876	21,876					
	Matching to be provided	14,584	21,876	21,876					
Indiana	Apportionment	12,104	12,104	12,104			No	None	
	Matching funds required[7]	8,069	12,104	12,104					
	Amount to be obligated	12,104	12,104	12,104					
	Matching to be provided	8,069	12,104	12,104					
Iowa	Apportionment	11,598	11,598	11,598			No	None	
	Matching funds required[7]	7,732	11,598	11,598					
	Amount to be obligated	11,598	11,598	5,532	2,711	3,695			
	Matching to be provided	7,732	11,258	5,532	2,711	3,695			
Kansas	Apportionment	11,078	11,078	11,078			No	4,500	11.6
	Matching funds required[8]	7,385	11,078	11,078					
	Amount to be obligated	11,078	11,078	11,078					
	Matching to be provided	7,155	4,670	5,920	5,920	5,676			
Louisiana	Apportionment	7,732	7,732	7,732			Yes		
	Matching funds required[9]	5,155	7,732	7,732					
Maine	Apportionment	4,013	4,013	4,013			Yes		
	Matching funds required[10]	2,675	4,013	4,013					
Mississippi	Apportionment	8,705	8,705	8,705			Yes		
	Matching funds required[11]	5,803	8,705	8,705					
Missouri	Apportionment	14,519	14,519	14,519			No	None	
	Matching funds required[12]	9,679	14,519	14,519					
	Amount to be obligated	10,914	13,769	14,519	4,355				
	Matching to be provided	7,276	12,567	14,519	4,355				
Montana	Apportionment	8,093	8,093	8,093			No	None	
	Matching funds required[13]	4,239	6,100	6,100					
	Amount to be obligated	2,967	[14]3,123	[14]4,831	2,653	2,653			
	Matching to be provided	1,554	1,000	1,987	2,000	2,000			
Nebraska	Apportionment	8,660	8,660	8,660			No	None	
	Matching funds required[15]	5,773	8,660	8,660					
	Amount to be obligated	6,195	3,322	2,710	2,900	3,000			
	Matching to be provided	4,130	2,500	2,710	2,900	3,000			

[1]Matching requirements can be met from current funds. State has authority to borrow $2,500,000, if necessary, to match federal aid.

[2]Matching requirements can be met from current funds by 1949.

[3]State can not match with present highway balances plus current revenues. Under present tax rates it expects that $10,666,400 would remain unmatched at end of 1948. State highway authorities plan to ask for increase from 4 to 5 cents in gasoline-tax rate and increase in registration fees.

[4]All state highway-user revenues go to state general fund and all funds for highway work are appropriated by legislature from general fund. (In recent years revenues from highway-user taxes have far exceeded appropriations for highway purposes.)

[5]All state highway-user revenues go to state general fund, and all highway expenditures are made by appropriation therefrom. Highway-user revenues have been from $6,000,000 to $9,000,000 greater than highway appropriations in each of last 6 years. Highway-user revenues, if assigned to highway purposes, are sufficient to match purposed apportionments by 1948.

[6]Matching requirements can be met from balances now available plus current revenues. Balance of more than $100,000,000 is now in general fund from which general assembly could provide additional funds if necessary.

[7]Matching requirements can be met from present balances plus current revenue.

pital improvements of major highways.

Seven states are undecided as to how they would finance the program if it got under way next year, which was assumed for purposes of making the survey. In these states the formulation of a financing program awaits final enactment of the federal-aid law by the Congress, and after that a consideration of the problem by their legislatures. But none of them foresee insurmountable difficulties, and none report plans for obtaining additional funds through increasing tax rates. Here are the seven states:

Delaware is a "one-fund" state, with all funds for highway work appropriated by the legislature out of the general fund. Revenues from highway-user taxes in recent years have far exceeded appropriations for highway purposes.

Louisiana states that while its program is not formulated, it will not be necessary in any case to increase existing tax rates.

Maine expects to continue its state highway policy in effect for many years of issuing bonds for part of the major improvement program, but no estimates of amounts are available.

Mississippi recently set aside about $22,000,000 to retire all non-highway bonds, and there remains approximately $12,000,000 in general funds, with the governor and legislative leaders definitely committed to provide adequate funds for matching federal-aid highway grants.

Oklahoma will need an additional $12,000,000. The governor and legislative leaders are said to have given assurance that the funds necessary for matching the highway program will be provided.

Montana's current revenues assigned to the state would fall about 30 per cent. short of matching the total apportionment. Funds from other sources or the sale of bonds would be necessary. No estimates are given as to the amount of matching funds which may be made available from the counties or cities.

Nebraska distributes a large portion of its highway revenue among political subdivisions, and is unable at this time to estimate how much of it would be available for matching purposes. More than two-thirds of the total apportionment could be obligated from present balances and the state's share of estimated revenues.

The survey reveals numerous significant sidelights on the position of the states generally to finance the contemplated program. Bond issues have been authorized, for example, in New Mexico, South Carolina, West Virginia and North Dakota, yet the total highway indebtedness of the first three states will continue to decline.

In Alabama the highway department reports that it will be able to match H. R. 4915 from current revenues, but has the authority to borrow $2,500,000 more, if needed.

Illinois can obligate its entire apportionment in three years from existing balances and current revenues, with $100,000,000 more in the state general fund from which the general assembly could draw upon for matching purposes if necessary.

A state-by-state summary of re-

(*Continued on page* 70)

ESTIMATED ABILITY OF STATES TO MATCH THEIR FEDERAL-AID APPORTIONMENTS UNDER H. R. 4915—PART II

(American Association of State Highway Officials)

State		Amounts (000 omitted) by Years					Will It Be Necessary To Issue Bonds?	Local Contributions	
		1945	1946	1947	1948	1949		Amount (000 omitted)	Percentage of Total Receipts
Nevada	Apportionment	4,890	4,890	4,890			No	None	
	Matching funds required[7]	724	940	940					
	Amount to be obligated	4,890	4,890	4,890					
	Matching to be provided	724	940	940					
New Hampshire	Apportionment	2,438	2,438	2,438			No	510	2.4
	Matching funds required[7]	1,625	2,438	2,438					
	Amount to be obligated	2,438	2,438	2,438					
	Matching to be provided	1,625	2,438	2,438					
New Mexico	Apportionment	6,542	6,542	6,542			Yes	None	
	Matching funds required[16]	2,634	3,663	3,663					
	Amount to be obligated	6,542	6,542	6,542					
	Matching to be provided	2,000	3,000	3,461	1,499				
North Dakota	Apportionment	6,177	6,177	6,177			Yes	2,400	18.8
	Matching funds required[7]	4,118	6,177	6,177					
	Amount to be obligated	6,177	6,177	6,177					
	Matching to be provided	4,118	3,088	3,089	3,088	3,089			
Ohio	Apportionment	19,397	19,397	19,397			No	8,663	7.1
	Matching funds required[7]	[17]11,800	[17]17,619	[17]17,619					
	Amount to be obligated	19,397	19,397	19,397					
	Matching to be provided	[17]11,800	[17]17,619	[17]17,619					
Oklahoma	Apportionment	10,581	10,581	10,581					
	Matching funds required[18]	6,414	9,455	9,455					
Oregon	Apportionment	7,204	7,204	7,204			No	None	
	Matching funds required[7]	3,139	4,406	4,406					
	Amount to be obligated	7,204	7,204	7,204					
	Matching to be provided	3,139	4,406	4,406					
South Carolina	Apportionment	6,791	6,791	6,791			Yes	None	
	Matching funds required[19]	4,527	6,791	6,791					
	Amount to be obligated	6,791	6,791	6,791					
	Matching to be provided	4,527	6,791	6,791					
South Dakota	Apportionment	6,473	6,473	6,473			No	3,421	20.7
	Matching funds required[20]	3,479	5,024	5,024					
	Amount to be obligated	4,750	5,000	5,000	4,669				
	Matching to be provided	1,000	4,000	4,400	2,288	1,839			
Tennessee	Apportionment	10,575	10,575	10,575					
	Matching funds required	7,050	10,575	10,575					
Texas	Apportionment	29,547	29,547	29,547			No	None	
	Matching funds required[7]	19,698	29,547	29,547					
	Amount to be obligated	29,547	29,547	29,547					
	Matching to be provided	19,698	29,547	29,547					
Vermont	Apportionment	2,438	2,438	2,438			No	858	6.5
	Matching funds required[21]	1,625	2,438	2,438					
	Amount to be obligated	1,601	1,583	1,938					
	Matching to be provided	1,067	1,304	1,938					
West Virginia	Apportionment	5,831	5,831	5,831			Yes	None	
	Matching funds required[22]	3,887	5,831	5,831					
	Amount to be obligated	5,831	5,831	5,831					
	Matching to be provided	3,887	5,831	5,831					
Wisconsin	Apportionment	11,857	11,857	11,857			No	5,529	9.9
	Matching funds required[23]	7,905	11,857	11,857					
	Amount to be obligated	3,953	7,905	11,857	7,904	3,952			
	Matching to be provided	1,977	4,941	7,905	7,904	5,928			

[8]State can match proposed federal aid by extending matching period into 1948 and 1949.

[9]State has legislative authority to issue bonds for matching part of funds proposed under pending federal legislation. Formulation of complete financial program must be deferred unitl after pending federal legislation is acted upon, but in any case it will not be necessary for state to increase present highway-user tax rates.

[10]It will probably be necessary for state to continue to borrow part of funds required for construction of major highway improvements. This state highway policy has been in effect for many years.

[11]State will not be able to match proposed federal aid from current revenue since countries receive very large portion of state highway-user taxes. State general fund is in best condition in its history. Legislature recently set aside approximately $22,000,000 to pay off all outstanding non-highway bonds and there remains in the general fund uncommitted a balance of approximately $12,000,000. Governor and leaders of both houses of legislature are definitely committed to providing adequate funds to match any federal aid for highways which may be available, and the uncommitted blance now in state general fund are more than adequate. State may also consider sale of bonds to obtain funds for highway construction.

Tractor-Trucks Haul 11-Ton Loads of Asbestos Up 24 Per Cent Grade

Latest of a Series of Quarry Haulage Methods Used by Bell Asbestos Mines, Ltd., Unaffected by Rain, Snow or Ice

By W. E. TRAUFFER

• Two tractor-trucks loaded with 11 tons of asbestos on the inclined roadway out of the Quarry.. The one at the left is on the 24 per cent grade.

another ON THE SPOT report

LIKE many other producers of nonmetallic minerals the Bell Asbestos Mines, Ltd., Thetford Mines, Quebec, has been confronted with the necessity for adapting its mining methods to changing conditions. Asbestos has been mined in this area, which for many years has produced considerably more than half the total world production, for over 75 years. Originally most of the deposits were worked by open-quarrying methods but as the quarries were deepened beyond the economical limits of this method many producers changed to underground mining. Only a fortunate few have hillside deposits which can be quarried indefinitely.

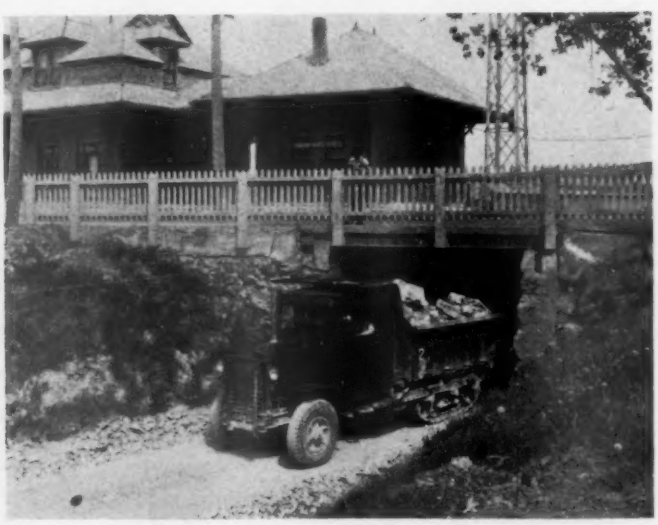
Bell Asbestos Mines, Ltd., shares with two other producers one of the best deposits in this area. Like most of the deposits, it is a basic intrusion —a serpentinized peridotite in which chrysotile asbestos fiber exists in veins. Bell's section of this deposit is 1,100 feet long by 800 feet wide and diamond drilling indicates a depth of at least 1,300 feet below the level of the railroad through Thetford Mines which is considered to be ground level. Bell's predecessor worked this deposit above ground level on a small scale until 1892, when a processing plant was built and the quarrying operations were expanded. Subsequent rebuilding and enlargement of the plant accelerated the rate of depletion of the deposit. When Bell Asbestos Mines, Ltd. was formed in 1934, the quarrying had already gone below ground level. Now the quarry capacity is 1,600-1,800 tons of ore daily and the plant processes about 1,500 tons, depending on the nature of the ore and the types of products desired.

The proportion of asbestos in the rock runs as high as 18 per cent. in some places but the average is about 8 to 10 per cent. Some of the fiber runs up to 3 inches in length. Rock containing less than 1½ per cent. asbestos is not considered to be pay ore.

As the quarry deepened the necessity for maintaining a safely sloping wall contracted the mining area, and the haul out of the quarry gradually became steeper. In anticipation of the time when open-quarrying methods would have to be abandoned, a

• One of the two Diesel shovels loading asbestos ore into a tractor-truck.

• A loaded tractor-truck emerging from the railroad and highway underpass.



500-foot mine shaft was sunk alongside the deposit. This is 12½ feet square, has 4 compartments and is lined with concrete and structural-steel beams. A 330-foot level was then opened with a main haulage way and two branch haulage ways from which ore passes were carried up to the floor of quarry. Tractors equipped with bulldozers were used to feed the quarried stone into holes or passes. In the haulage ways the material was loaded through air-operated cramp gates into 5-ton side-dump cars. These were hauled by electric trolley locomotives to the shaft, where the ore was dumped through an ore pass into the loading pocket. The 5-ton buckets of the balanced skip were loaded through air-operated gates. At the surface they discharged the ore into a 250-ton coarse-ore bin in the shaft head-frame. Trains of 10-ton side-dump cars were used to haul the ore to the plant from the head frame.

The skip is operated by a 48- by 72-inch Canadian Ingersoll-Rand 2-drum hoist driven by a 250-horsepower motor. There is also a cage hoist for service and men. This is operated by a 96- by 32-inch 1-drum hoist driven by a 150-horsepower motor. Both hoists are completely equipped with safety devices.

This combined quarry and underground system did not solve the problem of the gradually shrinking quarrying area and, although it worked quite well during warm weather, difficulties due to snow and ice were encountered in winter. Therefore, later on, the combined system was abandoned in favor of surface transportation. Early in 1944 crawler trucks began to haul the ore out of the quarry on an inclined roadway. This system worked out much better than the car and cable incline which antedated the underground system and it will be used as long as possible. In the meantime various underground - mining methods are being studied and one will be selected for use when the ultimate 350 - foot depth of the quarry is reached. It is probable that the same shaft, underground cars and locomotives will be used.

• General view of the Bell asbestos plant with the truck ramp at left.

• One of the tractor-trucks discharging its load at the plant.

The quarry has been developed in benches averaging roughly 40 feet in height and the floor is now 250 feet below ground level. Snake holes are drilled horizontally into the bottom of the face in 2 or 3 rows, depending on its height, and up to 24 feet in depth. Ingersoll-Rand D35 dry drifter drills and Jackbits are used. In places there are narrow bands of feldspathic intrusion which must be removed and wasted. Some of this material is so hard that only 2 feet of hole can be drilled per hour.

The explosive used is Canadian Industries, Ltd., 40 per cent. Forcite in 1¼-inch cartridges and this is detonated electrically with instantaneous caps. The comparatively small amount of secondary drilling necessary is done with Ingersoll-Rand jackhammers. The same explosive is used in 1-inch cartridges which are also detonated electrically.

The ore is loaded by two P & H 1¼-cubic yard shovels with Caterpillar Diesel engines and by a Marion 1¼-cubic yard steam shovel into a fleet of 6 Linn tractor-trucks or "half-tracks." Usually 5 of these trucks are in use and one is kept in reserve. They are equipped with 7-cubic yard end-dump bodies but carry an average load of about 11 tons. These are standard machines powered by 136-horsepower Cummins Diesel engines and have 8-speed transmissions giving various speeds from 1.14 to 12.50 miles per hour.

These machines average 6 miles per hour for the 6,000-foot round trip between the quarry and the plant. The inclined roadway from the quarry was cut out of the solid rock wall with the excavated material used as fill. It has a grade of 14 per cent. for the first 200 feet, then 24 per cent. for 580 feet and 6 per cent. for 400 feet. The last stretch goes through an underpass below the main railroad line and the main highway through Thetford Mines and ends at ground level. Up to this point it is a 1-lane road, 15 feet wide in most places, with numerous wider stretches for pass-

• View looking down into the Bell quarry. The inclined roadway is visible at the left.

ing. The trucks then travel 600 feet at ground level, 150 feet up an 18 per cent. grade and 410 feet more on the level to the plant. The trucks use their second low gears for climbing out of the quarry at 1.94 m.p.h.

• Head frame over the 500-foot mine shaft.

On the level under load the 3.61 and 5.52 m.p.h. speeds are used.

As the writer can attest from personal experience these trucks experience no difficulty in climbing these steep grades even in wet weather. With winter snow and ice,

• Bulldozer feeding quarried rock to underground system formerly used.

however, grousers are necessary for proper traction. The trucks each consume 2 gallons of ordinary Diesel fuel oil per hour for 2 1/3 round trips. They require no special attention and are lubricated, greased and checked regularly as recommended by the manufacturer. They are operated two 8-hour shifts daily and are serviced during the third shift in the plant garage. Fuel oil is stored in a 15,000-gallon tank near the garage.

Four International tractors equipped with Bucyrus-Erie bulldozers are used to maintain roadways and for cleaning up in the quarry.

The plant produces only raw asbestos in 16 grades, graded principally on the length of the fiber, and is flexible enough that its output can be concentrated largely on the types in demand at any time. The principal grades are crude, spinning, shingle, paper stock, and shorts. The process consists of many stages of crushing, screening and lifting the fiber as soon as it is released from the rock. Screen graders are used for sizing and special packers are used to compress the fiber before it is packed into jute bags. The bagged fiber is stored in three sheds each 400 feet long, 60 feet wide and 20 feet high.

Tests are made of the fiber quality —length, harshness, etc. — before bagging and check tests are made before shipping. The writer was much impressed by the care taken throughout all the quarry and plant operations to prevent even the slightest contamination of the asbestos. Even matches are pocketed and disposed of where they cannot possibly get into the flow of material.

The handling of the waste from the plant is a major problem. This waste consists of rock up to 2 inches in size, pulverizer fines and sand. It is hauled in a 50-ton side dump car 1½ miles to the edge of a hill from which it is dumped into a waste pile.

Officers of Bell Asbestos Mines, Ltd., are: O. C. Smith, president and general manager; F. P. Smith, secretary. H. A. Smith is general superintendent, H. L. Monro is chief engineer and J. C. R. Martin is assistant chief engineer.

Highway Bill (*from page 67*)

ports from 28 of the 30 states which had replied as of November 18, 1944 appears in the accompanying table. (States not reporting are Idaho and Tennessee.)

Shown for each of the five years, 1945 through 1949, are the esimates where given of the amount of federal-aid funds the states would obligate (line 3), and the matching amounts to be provided (line 4). The bill, H. R. 4915, provides three annual authorizations of $500,000,000 each, with the federal matching share 60 per cent. the first year, 50 per cent. in the second and third years, but the bill, S. 2105, since passed by the Senate and signed by the President as already mentioned, provides a straight 50-50 matching basis, which would increase the states' share under the first year's authorizations. This bill originally provided only $450,000,000 annually but, through conference agreement with the House which had previously approved H. R. 4915, this amount was raised to $500,000,000.

Victory (*from page 62*)

of the O.D.T. requirement estimate of 299,600.

Heavy reductions were also made in the number of light trucks authorized, the heavy-heavy trucks approved for production, the percentages approved, compared with requirements, being 31, 32.4 and 42.2 respectively. The production of these trucks ceased in March, 1942, and was not resumed until late in 1943.

In comparing the final authorization with the tentative 1945 program, the largest reductions were made in the light-heavy and heavy-heavy truck categories. According to the earlier tentative program the annual figures would have been: Light trucks, 38,132; medium, 134,901; light-heavy, 49,750, and heavy-heavy, 13,122. The percentages received in the final authorization were respectively 93.6, 81.3, 63.2 and 74.5 per cent. of the earlier tentative estimate.

However, the 1945 program compares favorably with the approved 1944 truck production program, which totaled 101,357, divided as follows: Medium, 73,475; light-heavy, 20,069; and heavy-heavy, 7,813. The bulk of these vehicles were to have been built during the third and fourth quarters of 1944.

The increase over the quantities available in 1944 for domestic uses represents a bare minimum sufficient to keep in operation a domestic transportation system depleted by another year of wear and tear under the rigors of war-time conditions, accentuated by the fact that stock piles of trucks frozen at the beginning of the war were finally exhausted during 1944 and that virtually no new production had been authorized during 1942 and 1943. New demands on total 1945 United States commercial production will include meeting minimum requirements, first, for liberated areas and also for transportation of supplies over the Ledo-Burma Road route into China, both of which requirements are closely related to military operations. This has resulted in the increase of the figure for other than domestic from 23,566 in 1944 to 56,566 in the revised 1945 program.

In view of the increased pressure of military requirements, W.P.B. officials said, it has been necessary, despite the very urgent needs for commercial trucks, to establish as a basic policy in the production of the 1945 truck program the principle that in the event of conflict between the production of military trucks and the commercial trucks, all possible steps shall be taken to see that the military production is accomplished at the expense, when necessary, of non-military programs.

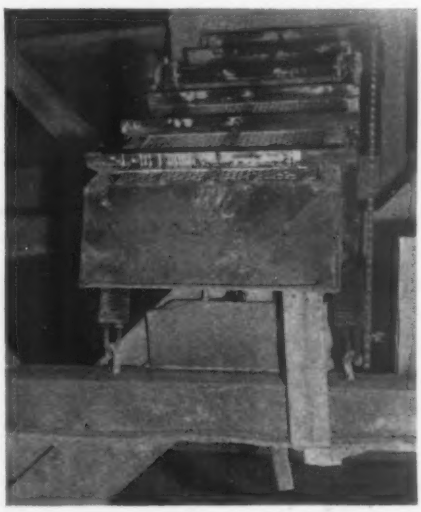
Reid-Holcomb Company, Indianapolis, recently completed moving into larger, more flexible quarters. The new yards, shop and warehouse are now located at 1816 Kentucky Avenue, where 112,700 square feet enable them to carry a greatly enlarged inventory of new and used machinery. The company's new office is downtown, at 370 South Illinois Street, just outside the congested traffic district.

Gingell Quarries Now Operating Separate Agstone Plant With 100 Ton Daily Output

• Left—General view of plant from quarry. Above — Gasoline-powered shovel loading stone at quarry face.

another ON THE SPOT report

SEVERAL months ago[1] Pit and Quarry published an article describing the Gingell Quarries plant at Fairfield, Pennsylvania, where a 20-foot water wheel has been supplying power for the past quarter of a century. In March, 1944, this operator opened a pulverizing plant on the site of an old, abandoned lime kiln several miles distant from the main establishment. Of particular interest is the fact that this plant's entire output of 100 tons of agricultural limestone per 10-hour day is sold on a spread basis, with a base price covering deliveries within a 5-mile radius, and an added charge of 5 cents per ton per mile for all deliveries outside this area.



• The 2- by 6-foot single-deck Gyrex screen which is mounted directly over the 200-ton finished-product storage bin.

The raw stone for the pulverizing plant is taken from the original open quarry operated many years ago for the lime kiln. The 130-acre deposit analyzes about 90 per cent. calcium carbonate and 1.07 per cent. magnesium carbonate, and it is at present being worked on a face 25 feet high by 150 feet long. A ½-cubic yard Austin shovel is used for recovery, and the 100-yard haul from the quarry face to the pulverizing plant is made by White dump trucks.

By WILLIAM M. AVERY

The trucks dump the raw stone into a hopper which feeds the 10- by 20-inch Climax primary jaw crusher. From the crusher the stone is conveyed to a 50-ton surge bin over an 18-inch wide by 15-foot long Trowbridge belt-conveyor equipped with a Goodyear belt. In the original layout of the plant, which was in effect when the accompanying photographs were taken, a 12- by 24-inch Syntron electric vibrating feeder fed stone from the surge bin to a Number 20 New Holland hammer-mill, but the latter piece of equipment has recently been replaced by a Number 30 New Holland hammer-mill in order to increase production.

• Spreader weighing out load of agstone on the 20-ton platform scale.

The stone from the hammer-mill drops into a 6-inch by 42-foot Jeffrey vertical elevator which discharges on a 2- by 6-foot single-deck Robins Gyrex screen fitted with 20-mesh cloth. The minus 20-mesh stone passing through the screen drops directly into the 200-ton finished-product storage bin, while the oversize drops through a chute into a 16-inch New Holland roll crusher, which is in closed circuit with the screen

(*Continued on page* 77)

• The number 20 hammer-mill which has very recently been replaced by a number 30 machine in order to step-up production.

[1]Pit and Quarry, October, 1944, page 61.

Latest Reviews of State Government Plans for Post-War Highway Building

ALABAMA In my 1943 letter I stated that Alabama had plans and survey partially completed on $12,500,000 worth of work which could be started within six months after termination of the present emergency. Projects totaling in value approximately $3,000,000 of this $12,500,000 have been placed under contract due to the fact that they were approved by the War Production Board under our 1944 emergency construction program, approval being based entirely on their being classified as necessary transportation items in our war effort. This leaves approximately $9,500,000 in completed plans and surveys still available for post-war construction. Additional plans and surveys have been completed so that I can conservatively say that we now have $15,000,000 worth of work which could be let within nine months after the termination of the present emergency.

We have submitted a post-war program to the Federal Public Roads Administration for approximately 1,125 miles, which is estimated to cost $54,202,000. Most of these submitted projects have been approved by the Public Roads Administration for immediate survey. Progress is rather slow on these projects due to the scarcity of field personnel; only three field parties being available at present for this work.

It seems now that there will be a compromise bill passed by the Congress between the two bills which have been submitted. S. 2105 allocates $51,636,000 to the state of Alabama and H. R. 491 allocates $58,967,000. Therefore, it would seem that our program, which has been submitted in the amount of $54,202,000, will fit very closely into any post-war program which the Congress is likely to adopt.

Careful estimates made by this department indicate that Alabama will be able to match federal funds as they are made available by either S. 2101, H. R. 4915 or any compromise between these two bills.

E. M. Rodgers
Assistant Highway Director
Dec. 11, 1944

ARIZONA The latest development in Arizona's post-war highway construction program has been the correlation of the many projects we had set up to the anticipated program of funds in the act of the Congress in its highway bill. The total amount of money for Arizona figures out to be about $24,000,000 for the first three years.

Projects that have plans complete for placing under contract amount to $2,500,000. Another group of projects which can be placed under contract within 30 to 60 days make up an additional amount of $4,000,000.

Some delay was experienced when the Interregional Highway Report was made public. This was because many of our projects were on this system and surveys already completed were found to be sub-standard. Inasmuch as our design standards were reasonably close to the interregional standards, it was decided to proceed with the completed survey data and use interregional standards when new surveys were started. Steady progress is being made with the remainder of the program, and Arizona will be ready to build highways when the "Go" signal is given.

H. H. Wessel
Assistant Engineer
Dec. 12, 1944 *Plans and Surveys*

A year ago the state highway departments were invited to contribute statements describing their post-war highway programs and the January, 1944, issue of Pit and Quarry published the reports on 43 of the 48. Recently the authors of those statements were asked to bring their reports up to date for publication in this issue and up to the time of going to press more than half had responded. Most of the supplementary reports presented herewith were prepared prior to the approval of S. 2105 by the Congress and should be read with that fact in mind.—Directing Editor.

ARKANSAS Post-war plans for the state of Arkansas call for 2,400 miles of paving and road improvement to cost an estimated $80,000,000. Of this total, projects costing $9,000,000 are completely planned and ready for contracts to be awarded as soon as material and funds become available.

Arkansas State Highway Commission
W. W. Mitchell
Dec. 15, 1944 *Director-Chief Engineer*

CALIFORNIA The post-war highway program was altered by the California Highway Commission on January 20, 1944, to comprise 145 road and bridge projects, the estimated construction cost of which will amount to between $80,000,000 and $90,000,000. The program now involves approximately 600 miles of state highways and includes 181 bridges and 147 grade-separation structures.

The volume of the post-war program is based upon an estimate of state highway revenue and unallocated balances, covering a 4-year period, which would be available for a 3-year construction period. Should federal aid in amounts proposed in pending Congressional legislation be made available, the schedule could be advanced and the program greatly expanded.

Notwithstanding the shortage of personnel and the priority of currently essential work of highway and bridge repair and federal access-road construction, preliminary engineering for the post-war program is ahead of schedule. On December 1, 1944, plans and specifications were completed for $58,000,000, or about 70 per cent, of the whole program. Right-of-way acquisition is progressing, and the entire program is expected to be ready before July 1, 1945.

It is now estimated that the program can be put under way at any time at an approximate rate of $8,000,000 to $9,000,000 monthly.

To date 41 of California's 58 counties have submitted budgets for allocations from the $1,500,000 appropriation made by the state legislature in 1943 for surveys and plans for post-war improvements to county roads. In addition to this fund, the legislature in the 1944 special session appropriated $10,000,000 on a matching basis to cities and counties for the planning and acquisition of property for post-war public works.

G. T. McCoy
Dec. 11, 1944 *State Highway Engineer*

CONNECTICUT As of December 12, we had 120 projects ready for bids (plans completed and rights-of-way acquired) with an estimated value of $10,704,000. Another $17,025,000 worth of work covers 78 projects upon which surveys are completed and design work is now in progress. Completed surveys upon which plans have not yet been started account for 35 more projects on another 32 projects whose total value is estimated at $29,950,000. These make an over-all total of $65,323,000 for 265 projects.

Making a program of this work will be governed by our income after the war, as was indicated in our statement last year. The actual budgeting for construction, maintenance, etc., rests with the general assembly which holds its biennial session in the first five months of 1945.

W. C. Murray
Dec. 20, 1944 *Executive Assistant*

INDIANA I am glad to be able to tell you that we have plans completed for state highway bridge and grade-separation projects to cost an estimated $4,000,000. We have road plans 100 per cent. complete for projects to cost an estimated $13,000,000, and we have other plans from 50 to 90 per cent. complete for projects to cost an additional $13,000,000. Plans are in various stages of completion up to 50 per cent. for an additional $20,000,000 worth of road work.

Our prospective income for the present calendar year is pretty well obligated at this time. About all we can do this year is to complete contracts already awarded and continue our routine maintenance work and also continue our post-war planning.

State Highway Commission of Indiana,
S. C. Hadden,
Jan. 10, 1945. *Chairman.*

IOWA No one knows with any degree of accuracy at this time what the post-war highway program in the state of Iowa will be. Up to the present moment (so far as I am aware) the Congress has not yet taken final action with respect to proposed federal post-war highway legislation. We hope, of course, that within the next few days the Congress will have taken such action. After the Congress has acted it will then be necessary to determine what, if any, legislation the state will necessarily have to adopt in order to carry on suitable post-war highway work. The Iowa state legislature will meet early in January. Until such time as the state legislature has taken whatever action it decides to take, it is not possible to state with any degree of certainty what the post-war program will be in the state of Iowa.

F. R. White
Dec. 9, 1944 *Chief Engineer*

KANSAS We are proceeding along the lines as set out in our letter of December 17, 1943, to you and no pertinent changes have been made. We are still short on technical help but are getting a sizeable amount of plans completed for post-war work.

R. C. Keeling
Dec. 4, 1944 *State Highway Engineer*

KENTUCKY Last year you were told that this department could place under contract on short notice projects estimated to cost $10,500,000. Of course, additional planning has been done during the last year and this estimate may be raised by approximately $5,000,000. As soon as federal appropriations are available and restrictions are lifted this department can on short notice put under contract a good number of projects distributed throughout the state in a total estimated amount of $15,000,000.

T. H. Cutler
Dec. 4, 1944 *State Highway Engineer*

MAINE Our situation is very little different from what it was last year. As yet the amount of money that will be available from the federal government has not been determined and until our legislature, which meets this winter, has allocated funds, we can not prepare a definite program. We believe that we will have plans prepared sufficient to take advantage of available funds.

R. M. Page
Dec. 8, 1944 *Office Engineer*

MARYLAND Our original program was based upon federal legislation in terms of $1,000,000,000 per year. It now appears that there will only be about one-half that amount appropriated, and it is, therefore, necessary for us to make adjustments in our program. We are now in the course of making such adjustments, and for this reason can not give any authentic information at this time.

Wilson T. Ballard
Dec. 4, 1944 *Chief Engineer*

MASSACHUSETTS The size of the post-war state highway program of the Massachusetts Department of Public Works depends on whatever appropriations may be made by the legislature as well as the pending legislation in the Congress. However, it appears that the program may be in the vicinity of $70,000,000. Of this, projects are now ready for advertising estimated to cost about $17,000,000 and plans are being prepared for more than enough projects to take up the remainder of the anticipated appropriations.

Herman A. MacDonald
Dec. 7, 1944 *Commissioner*

MINNESOTA Our shelf of plans and surveys has been substantially increased during the past year, but, in general, the post-war outlook, so far as our state is concerned, has not altered very much.

M. J. Hoffmann
Dec. 6, 1944 *Commissioner of Highways*

MISSOURI Although the Congress recently passed a post-war highway bill, we have not been notified concerning the amount of federal money which will be available for this state. Due to a non-diversion clause governing our highway revenues, the money collected from automobile registration and gasoline taxes is earmarked for construction and maintenance.

Due to the restrictions imposed by the federal government during the war, very little construction and reconstruction could be done and as the result we have built up a backlog of approximately $13,000,000 which is not obligated at this time.

Anticipating that the federal government would provide funds for post-war highway construction, we have a large amount of projects ready or in the process of completion, so that work can be started as soon as post-war funds have been made available by the federal government. These plans cover work on our main highway system, on our supplementary or feeder roads, and some work within our municipalities and, therefore, would be well distributed over the entire state.

C. W. Brown
Dec. 14, 1944 *Chief Engineer*

NEVADA Conditions are about the same as described in our report of last year, except that it is quite apparent that any federal highway legislation passed will carry a muchly decreased appropriation, especially below the amount recommended by the American Association of State Highway Officials. The bill recently approved by the House and submitted to the Senate for action

provides funds in the amount of $500,000,000 a year for each of the three post-war years. This would give Nevada approximately $4,900,000 per year and, with the state's matching share, the sum available would amount to very nearly $6,000,000 each year. A year ago we were in hopes that this state would receive in excess of $10,000,000 each year.

The department can anticipate receiving no federal funds for 1945 and as Nevada depends almost entirely on federal aid for highway construction it will be impossible to place more than one or two small projects under way during the next calendar year.

We are spending all our effort on the preparation of plans for post-war construction and at the present time we have a shelf of plans for projects totaling in excess of $3,500,000 and by June of 1945 will without doubt have between $5,000,000 and $6,000,000 worth of plans ready. This would permit the absorption of the first year's funds should they become available.

ROBERT A. ALLEN
Dec. 7, 1944 *State Highway Engineer*

NEW HAMPSHIRE Our estimate for jobs completed by January 1, 1945, was not at all accurate. This was partially due to the fact that during all this last season we have had to devote all the efforts of our depleted force in furnishing plans and constructing 87 miles of access roads to forest areas and mica mines for the federal government. The result is that, of the 51 projects I referred to, 5 are completed and the others can be completed in short order if we can get men to work on them.

FREDERIC E. EVERETT
Dec. 8, 1944 *Commissioner*

NEW JERSEY Substantial progress on New Jersey's proposed post-war program was made during the past year by the State Highway Department Survey in Plans Division. Governor Walter E. Edge has announced that road revenues will be conserved to provide employment when hositilities end and the state highway staff is devoting special effort to be ready to "go".

Under the direction of Harold W. Giffin, engineer of Surveys and Plans, projects estimated at $74,000,000 are being brought to final stages. Of this total, 49 per cent. of the work has been completed. For some contracts the plans are 100 per cent. finished and the others are at varied rates on the progress chart.

SPENCER MILLER, JR.
State Highway Commissioner
Dec. 8, 1944

NEW MEXICO There is provided below information relative to our post-war highway program, which reflects the progress made to date:

Estimated cost of state highway and bridge projects ready for letting as of December, 1944—$3,500,000.

Estimated highway mileage involved—120 miles.

Estimated cost of state highway and bridge projects ready for letting as of December, 1945—$14,000,000.

Estimated highway mileage ready for letting as of December, 1945—372 miles.

During the present year, 1944, we have had approval for over $2,000,000 of construction, involving about 200 miles, the greater portion of which is with federal participation, and of this amount more than $1,000,000 has been awarded to contract and is well along toward completion. In addition there has been some construction in connection with access roads which has brought the total construction program, as undertaken this year, to approximately $1,500,000.

Some of the above were contracts on what would be normal maintenance work which heretofore has been performed with state forces. However, we found in letting this work to contract that the prices were especially low, the construction performed quickly, and the quality of the work extremely satisfactory. It is possible, because of this past experience, that in the future we will continue to let to contract maintenance work of a type that might be classed as low as new construction or reconstruction.

F. G. HEALY
Dec. 20, 1944 *State Highway Engineer*

NEW YORK There is little that I can add at this time to the contents of the letter which I wrote you on November 29, 1943. As soon as definite federal legislation has been established, and it really looks as though this will take place in the reasonably near future, I believe that this state will formulate a program to utilize federal-aid money, as well as having the state establish a financial setup under which we could formulate a definite program for construction. It is impossible for me or anyone else to set up a program until financial arrangements are definitely fixed.

I can state, however, that New York State will be prepared with a reservoir of complete plans and estimates covering highways, parkways, throughways, bridges, highway-railroad grade crossings, and so forth, in an amount more than sufficient to absorb whatever sum of money may be fixed by the state and federal government for our first year's work after the war, and in all likelihood we will be prepared with sufficient plans completed to cover a major portion of a second-year program.

H. O. SCHERMERHORN
Dec. 4, 1944 *Acting Chief Engineer*

NORTH CAROLINA The highway bills that have recently been passed by both the United States Senate and House, and are now before a Joint Committee of the two bodies to iron out slight differences, in all probability will soon become law. In that event this state will secure a total of approximately $10,000,000 in federal funds for each of the three years, to be expended on primary and secondary roads and in urban areas. We will have adequate state funds to match the appropriation provided in these bills and, I am satisfied, over the 3-year period we will have no difficulty in expending the approximate $60,000,000 involved. I do feel, however, it will be difficult to expend the $20,000,000 which will be the amount available during the first year. This is due to the fact we have very few construction engineers, and I can not foresee the possibility within the first year after the end of the European war of securing adequate engineering personnel to take care of such a large program.

We have plans completed on approximately $6,000,000 of work which involves approximately 150 miles of roads. Plans are underway in various stages of completion on projects on which the construction cost is estimated at approximately $11,500,000 and involves 280 miles. We also have surveys completed or underway on which the plans have not been begun, and which are estimated to cost approximately $21,000,000 when constructed. It is, therefore, believed that, even with our slow progress in completing plans and designs for a post-war program, this phase of the work will be advanced sufficiently so there will be no hold-up from that cause.

W. VANCE BAISE
Dec. 4, 1944 *State Highway Engineer*

NORTH DAKOTA We can add to our statement made a year ago that we have plans completed for approximately 350 miles of highway construction, and

surveys have been completed and designs partially made on an additional 200 miles. Also, the Highway Department has been authorized, by an initiated measure passed at the last election, to issue tax-anticipation certificates not exceeding $12,360,000 for the purpose of providing funds to match federal-aid funds which will be made available by the legislation now pending before the Congress.

J. S. LAMB
State Highway Commissioner
Dec. 7, 1944

OHIO As for October 1, 1944, we have 149 completed plans involving approximately 385 miles of highway at an estimated cost of approximately $28,000,000. We have also plans under preparation ranging from 25 per cent to over 75 per cent completed as of October 1, 1944, which we hope to have completed by October 1, 1945 as follows: 51 projects involving 156 miles at an estimated cost of $25,500,000. Our Federal Aid Advanced Engineering (AE) also our Federal Aid Post-War Survey (PWS) and Federal-Aid Post-War Investigation and Study (PWI) programs are progressing well in spite of the immense amount of work involved in each program.

BUREAU OF LOCATION & RIGHT OF WAY
M. D. SHAFFER
Dec. 13, 1944 *Chief Engineer*

OKLAHOMA According to the present legislation, which is about to be finally passed and sent to the President for his signature, Oklahoma would receive a total of $10,581,000 divided as follows:

$4,672,000 to be expended on the federal-aid system;
2,645,000 on farm-to-market roads; and
3,174,000 on urban streets and highways.

These funds are to be matched by state funds which would give Oklahoma approximately a $21,000,000 annual program.

Oklahoma's post-war highway program will be financed adequately by the next legislature, which will convene early in January of 1945, by appropriations from the general fund and special gasoline-tax revenue. Oklahoma citizens are highway-minded and in every section of the state we find the people wholeheartedly in favor of an extensive program far in excess of the one which now seems to prevail.

Oklahoma now has a highway system of approximately 10,000 miles of various types of road broken down as follows: concrete pavement, asphalt pavement, brick pavement, graveled surfaces, maintained earth.

STATE HIGHWAY COMMISSION
BEN T. CHILDERS
Dec. 5, 1944 *Chairman*

OREGON The status of our post-war highway-construction program continues to be about as outlined in our letter of December 24, 1943. Some progress has been made in survey work and planning, but the definite selection of projects to be first undertaken is still being held in abeyance pending passage of the federal post-war aid and the issuance of the regulations which will govern the utilization of the federal funds.

Surveys are completed for work estimated to cost $60,000,000. Detailed plans are completed for work expected to cost $16,000,000.

Present indications are that Oregon's program for the 3-year period will be limited to a total of about $45,000,000. The federal-aid and urban portions of this program could be contracted in 12 to 15 months, if desired. The contracting of the secondary-highway portion might take a somewhat longer time, due to the fact that it has not been possible to anticipate and make surveys for the secondary projects in quite the same way that has been possible for the other classes of projects.

R. H. BALDOCK
Dec. 7, 1944 *State Highway Engineer*

SOUTH DAKOTA I wish to give you a listing of the status of new construction which has been programmed. This will give you an idea as to what we have prepared for the post-war construction program.

	Number of Projects	Total Estimated Cost
Ready bids, plans completed, right-of-way being secured	36	$5,000,000
Surveys completed, plans underway	20	3,000,000
Surveys underway	8	1,500,000
Surveys not yet started	15	3,000,000

The above listing covers new highway construction or reconstruction without surveying. At the present writing the State Highway Department has approximately 400 miles of base-course construction, which was completed prior to the advent of our entry into World War II and upon which a wearing course must eventually be placed. An approximate estimated cost of this wearing course would be between $2,000,000 and $3,000,000.

In addition it would necessarily follow that base courses and wearing courses would be placed; the cost of placing base courses and wearing courses on the above listing would be approximately twice the cost of the construction or, namely, $24,000,000.

E. W. MEEKER
Dec. 14, 1944 *State Highway Engineer*

TEXAS No additional developments have occured except that we are continuing with plans and specifications which are hopeful will meet the requirements of the post-war highway bill now pending in the Congress.

The estimated cost of highway and bridge projects on which plans and specifications are complete and ready for letting now totals approximately $60,000,000 worth of work. This covers approximately 1,600 miles of highway construction. We further anticipate that the estimated cost of highway and bridge projects to be ready for letting as of October 1, 1945, will total approximately $120,000,000 worth of work. This will cover an estimated 3,600 miles of highway construction. The above completed projects include plans and specifications on the designated highway system, farm-to-market or feeder-road projects, and urban projects.

D. C. GREER
Dec. 5, 1944 *State Highway Engineer*

UTAH The State Road Commission of Utah is proceeding with surveys and plans for the reconstruction and modernization of 495 miles of state roads following the termination of war. Federal legislation appropriating funds and establishing the basis of coöperation with the states is still in the making, but the Congress has provided funds for participation in preliminary engineering and in Utah this work is well advanced. The program as approved to date by the Public Roads Administration and the Road Commission includes 372 miles in 46 projects on the principal state highways and 123 miles in projects on secondary roads. The total estimated costs to date for surveys, plans, and estimates on these projects is $460,000 of which the federal government will pay $265,276.

The post-war construction costs involved in the completion of these projects, including rights-of-way, grading, surfacing, bridges, and railroad grade separation is estimated at $30,000,000. Plans are complete on construction work estimated to cost $2,500,000 and 60 per cent. complete on additional construction valued at $10,000,000. There is at

the present time a serious lack of engineering personnel both in the office and in the field. Funds are available for preliminary engineering, but trained men are not. If and when the commission's technical force can be augmented so as to fill in the gaps, the planning work will proceed with more satisfactory expedition. It is not known whether the federal appropriation will include participation in rights-of-way costs or not. To date very little right-of-way has been purchased or optioned on these projects.

Coincident with the 3-year federal program, the Road Commission plans to spend each year $600,000 on miscellaneous state road projects and betterments not reached in the federal set up. In addition, the cost of maintaining the 5,438 miles of state roads will be $2,500,000 annually. This figure, which is about $1,000,000 in excess of pre-war maintenance expenditure, will be necessary in the restoration of the roads after the war and will continue indefinitely as the minimum amount for bringing the federal-aid roads and secondary state roads to the required standard. There is the further consideration that the last two legislatures have added 300 miles of local roads to the state road system. The commission's road equipment is steadily wearing out and has had only minor replacement with new units during the past three years. An expenditure of $1,000,000 is now in sight as the minimum requirement for replacing obsolete and worn-out trucks, tractors, graders, and other motorized equipment. It is estimated that equipment replacement charges will be $550,000 in each of the first three years after the war. Fixed charges for administration of the state roads, including general office and district offices, shop, and laboratory equipment and supplies, road signs, and signals, appropriations from the gasoline tax for policing and accounting, and numerous other items total $625,000 annually.

Summarizing the above-estimated outlay, the Road Commission's obligation during the first year of the post-war program is as follows:

State's share of federal-aid projects	$1,200,000
State projects and betterments	600,000
Maintenance of roads	2,500,000
Purchase of equipment	550,000
Other costs and appropriations	625,000
Total	$5,475,000

Assuming that the net returns from the gasoline tax will in the first year after the war be $3,500,000, it is estimated from the foregoing aggregate expenditure that $1,975,000 will need to be obtained from financial sources not now available to the commission.

STATE ROAD COMMISSION OF UTAH
JOHN S. EVANS
Dec. 12, 1944 *Chairman*

VERMONT We have made some progress, having plans ready for about $2,000,000 worth of highway and bridge projects. We have also been working on the acquisition of rights of way as fast as the plans are completed.

H. E. SARGENT
Dec. 4, 1944 *Commissioner*

VIRGINIA On new construction we expect to have a minimum of $20,000,000 in plans ready for this type of work immediately at the close of the war and, in addition, $16,000,000 in plans covering reconstruction and widening of highways whose grades and alignment are adequate, making a total of $36,000,000 that can be put underway immediately at the close of the war. Also, since sending you the other article, two of four major projects have been released by the War Department as follows: The Lord Delaware Bridge over the Mattaponi River and the reconstruction of Route 13 on the eastern shore of Virginia in Accomack County.

R. P. ELLISON
Dec. 8, 1944 *Executive Assistant*

WASHINGTON There has been no material change in this department's post-war program as outlined in my letter of December 17, 1943. Definite post-war programs will not be formulated until final action is taken by the Congress upon the proposed federal-aid post-war authorizations under bills now before it for consideration. Under the provisions of S.2105 this state's allotment for the three categories, federal-aid system, secondary and feeder roads, and urban highways—would amount to about $6,540,000 annually for the three post-war years after deductions for federal administration costs and state planning surveys. This amount, matched by an equal amount of local funds, will provide an annual highway construction program of $13,000,000 of state, county and city projects. The allotment to this state for the federal-aid highway system will amount to $3,315,000 on the basis noted above. The proposed bill provides for matching the federal authorizations with local funds on a 50-50 basis.

Large inventories of needed highway and street projects have been compiled by the state, county and city highway and street departments and designs and preparations of plans of these are well underway. Progress toward completion of plans for post-war projects has been somewhat slow in all levels of local government due to the shortage of engineering help. Recently this condition has shown some improvement.

Because of the curtailment of the construction work during the war, accumulated surpluses in the state, county and city highway funds, plus the new current revenue during the post-war period, will be adequate to finance the local contributions to match the federal-aid authorizations under either of the proposed bills, S.2105 or H.R.4915. This state, therefore, will be in a favorable position to undertake the post-war program of highway construction when the occasion demands.

BURWELL BANTZ
Dec. 7, 1944 *Director of Highways*

WEST VIRGINIA We have set up a post-war program of highway construction of an estimated value of $66,044,700 and involving 893.3 miles. From the standpoint of engineering and financing, this program falls into three categories.

First is the shelf of projects of a value of some $19,000,000, surveys and plans for which were in various stages of completion when the outbreak of war stopped normal construction. We call these "pre-war" projects.

Second is the "Advance Engineering" program. Under the terms of the Defense Highway Act of 1941 West Virginia was allocated $109,600 of federal funds to be matched by the state for surveys and plans for future construction. This we estimate will yield a construction volume of $14,770,000.

Third is the post-war program made possible by the Congressional Act of July 13, 1943, which provided for the use, within certain limits, of unobligated Federal-Aid, Federal-Aid secondary, and grade crossing funds, for surveys and plans. Under this act West Virginia has set aside $474,750 to be matched by the state, giving a total of $949,500 for engineering.

In our post-war program we shall continue our policy of gradually extending the mileage of multiple-lane highways, as increased volume of traffic warrants the extra expenditure. Of the 893.3 miles set up, 46 miles will be of four-lane highway design, and 55.8 miles are on the recommended Interregional High-

way system. There are no expressways in cities, as that term is generally used in connection with elevated or depressed highways in the large metropolitan areas.

This does not mean that there are no bottlenecks within municipalities. Many West Virginia cities are located in very narrow valleys, where suitable building space is extremely limited, and land values are much greater than in towns of similar size in less rugged country. Therefore, old streets and sidewalks are narrow; alleys are few or non-existent; business properties are concentrated on the logical travel routes and railroads often occupy the space along the streams. These conditions have created a problem with which it has been hard to cope. Included in our post-war program are a number of projects to skirt such municipalities with major highways. The design will be such as to permit through traffic to by-pass the congested areas, and at the same time to provide for ready entry into and exit from the business sections over different streets or lateral roads.

In mapping out our post-war program, we have borne in mind one of the prime objectives of increased public construction, namely to afford employment on urgently needed improvements in localities where unemployment will most likely require it. For this reason we have spread our projects over the state roughly in proportion to population densities, and have included important improvements to a number of secondary roads.

The expenditures which would be required to bring the 33,000 miles of West Virginia highways up to desired standards so far transcend the amount of money which can reasonably be anticipated in the post-war period that we can expect to make only accelerated progress toward our goal. Our Highway Planning Division devoted several years to a comprehensive survey of our highway needs. The projected requirements to 1960 on the 4,800 miles of primary highways alone was $227,654,103.

We estimate that we can very profitably expend within the first few years following the war $163,489,789 on the improvement of our highway system, both primary and secondary. But contrast this with the funds that may materialize. Under the terms of the $1,500,000,000 highway bill before the Congress, West Virginia, over a three-year period, would be entitled to approximately $18,000,000. As the bill is now drawn West Virginia would have a total of $10,000,000 for the first year, and $12,000,000 for each of the following years, or a three-year total of $34,000,000. Costs of rights-of-way would come from this, thereby reducing the amount available for construction purposes to something like $28,000,000. This would be about one and one-third of our normal pre-war volume of contract construction.

STATE ROAD COMMISSION
ERNEST L. BAILEY
Commissioner

Dec. 18, 1944

WISCONSIN In our letter of December 18, 1943, wherein we noted $17,000,000 of state highway funds available, the amount can be changed to $22,000,000. In the same paragraph, where we indicated plans available for approximately 200 miles, this amount can be changed to approximately 300 miles with an estimated cost of $13,000,000 rather than the $10,000,000 noted.

E. L. ROETTIGER
State Highway Engineer

Dec. 4, 1944

WYOMING THE information furnished with our letter of December 31, 1943, is still good as far as our general post-war program is concerned, but may be supplemented by the following information dealing with specific projects:

PLANS READY FOR IMMEDIATE POST-WAR CONSTRUCTION

Project No. 1.—Cost $400,000; grading, draining, surfacing, oiling, bridges; length 11 miles; 120,000 man-hours of direct employment.

Project No. 2.—Cost $500,000; grading, draining, surfacing, oiling, bridges; length 13 miles; 150,000 man-hours of direct employment.

Project No. 3.—Cost $300,000; grading, draining, surfacing, oiling, bridges; length 14.3 miles; 75,000 man-hours of direct employment.

Project No. 4.—Cost $450,000; grading, draining, surfacing, oiling; length 8.5 miles; 100,000 man-hours of direct employment.

Project No. 5.—Cost $200,000; bridge and approaches; length 1.4 miles; 80,000 man-hours of direct employment.

Project No. 6.—Cost $150,000; overhead crossing and approaches; length 1 mile; 60,000 man-hours of direct employment.

Project No. 7.—Cost $135,000; overhead crossing and approaches; length 1.2 miles; 55,000 man-hours of direct employment.

Project No. 8—Cost $85,000; secondary road, grading, draining, surfacing and oiling; length 5 miles; 20,000 man-hours of direct employment.

Project No. 9.—Cost $110,000; secondary road, grading, draining, surfacing and oiling; length 3.5 miles; 30,000 man-hours of direct employment.

Project No. 10.—Cost $150,000; secondary road, grading, draining, surfacing and oiling; length 6.3 miles; 50,000 man-hours of direct employment.

Four Maintenance Shop Buildings.—Cost $150,000; 60,000 man-hours of direct employment.

PROJECTS FOR LATER CONSTRUCTION

Plans Completed.—15 projects; total cost $2,000,000; 700,000 man-hours of direct employment.

Plans To Be Completed within 6 Months to a Year.—20 projects; total cost $3,000,000; 1,000,000 man-hours of direct employment.

Engineering Employment. — 200 men.

HIGHWAY DEPARTMENT
J. R. BROMLEY
Superintendent

Dec. 13, 1944.

Gingell *(from page 71)*

using the same elevator that handles the discharge from the hammermill.

Only three men are required for the day-time operation of this plant, but added production is obtained by having a fourth man run through the 50 tons of raw stone in the surge bin after the quarry shuts down for the night. Deliveries are made with three Baughman spreaders on International trucks, one owned by the company and two rented. There is a Fairbanks 20-ton platform scale in the yard for weighing out shipments.

Thomas R. Gingell, owner of Gingell Quarries, is now in the United States Navy, "somewhere in the Mariannas." PIT AND QUARRY recently received a letter from Mr. Gingell, in which he says in part:

"I have just received the October issue of PIT AND QUARRY which was forwarded to me from home. It surely was good to see the pictures of the plant and the old water wheel after being away these past seven months. Although I am contemplating making various changes in the plant after the war, the old water wheel will definitely remain in the picture, not only for its sentimental value, but also because it is a dependable source of low-cost power."

During Mr. Gingell's absence the two crushing plants are being operated by his brother, George W. Gingell.

Board Meeting *(from page 65)*

dustry, especially coal, copper and iron ore, is booming, he said, and the sales of railroad ballast, the main outlet for aggregates in this area, are held down only by a shortage of railroad workers. He expects 1945 to be the best year in history if labor conditions get no worse.

According to Mr. Mitchell, the 1944 volume in California was equal to that of 1943 and 1945 prospects are very good. It now seems that most of the large war-construction projects are completed, he said, but the same assumptions made a year and two years ago were later proved to be unfounded. If, as now seems likely, the weight of our war effort shifts to the Pacific theater, 1945 business in this area may again reach record proportions.

The following association members and guests were present:

Ames (A. R., Jr.), Smith Engineering Works, Philadelphia.
Ash (Robert), Washington, D. C.
Aulmann (Theodore), Eagle Iron Works, Des Moines, Ia.
Berger (J. Fennell), J. A. Roeblings Sons Co., Trenton, N. J.
Bird (Paul P.), Boston Sand & Gravel Co., Boston.
Bliss (W. A.), Dravo Corp., Pittsburgh, Pa.
Brandenburg (J. A.), American Manganese Steel Division, New York.
Brown (Stuart), Dravo Corp., Pittsburgh, Pa.
Browning (C. G.), Lehigh Portland Cement Co., Allentown, Pa.
Bryce (A. J.), Certified Concrete Co., St. Paul.
Buckenheu (Harry), Smith Engineering Works, New York.
Bussmann (Charles), PIT AND QUARRY, New York.
Caldwell (H. P.), Ohio River Sand Co., Louisville.
Chubb (J. H.), Pennsylvania-Dixie Cement Corp., New York.
Clark (Claude L.), Ohio Sand & Gravel Assn., Columbus, O.
Conover (A. E.), Robins Conveyors, Inc., Passaic, N. J.
Cooper (J. S.), Memphis Sand and Gravel Co., Memphis.
Coppock (F. D.), American Aggregates Corp., Greenville, O.
Dann (Alexander), Dravo Corp., Pittsburgh, Pa.
Davison (E. K.), J. K. Davison & Bro., Pittsburgh, Pa.
Davison (H. M.), Hackensack, N. J.
Deister (Irwin F.), Deister Machine Co., Ft. Wayne, Ind.
Dixey (Joseph H.), Joseph H. Dixey Co., New York.
Durland (D. D.), Durland Sand Co., Wyoming, Pa.
Ferber (Herman B.), Tidewater Stone & Supply Co., Hackensack, N. J.
Foland (D. S.), Keystone Gravel Co., Dayton, O.
Foster (Alexander, Jr.), Warner Co., Philadelphia.
Fuller (F. C.), Portsmouth Sand & Gravel Co., Portsmouth, O.
Giles (William S.), Iron City Sand & Gravel Corp., Pittsburgh, Pa.
Goes (E. J.), Koehring Co., Milwaukee.
Hilton (Alfred N.), Southern Materials Corp., Norfolk, Va.
Hoefer (Charles, Jr.), Rock Products, Chicago.
Hummer (John W.), Portland Sand & Gravel Co., Portland, Pa.
Jahncke (Walter F.), Jahncke Service, Inc., New Orleans.
Johnson (Alexander), Central Concrete, Inc., Brooklyn, N. Y.
Johnson (R. C. and Mrs.), Simplicity Engineering Co., Durand, Mich.
Johnston (V. O.), Lincoln Sand & Gravel Co., Lincoln, Ill.
Kelly (Frank L.), Colonial Sand & Gravel Co., New York.
Klein (W. H.), Dixie Sand & Gravel Corp., Nazareth, Pa.
Lucas (J. P.), Ohio River Sand & Gravel Corp., Parkersburg, W. Va.
McCarthy (R. J.), Hodgson Sand & Gravel Co., Morristown, N. J.
McCracken (J. F.), American Builders' Supply Co., Louisville.
McCue (Timothy P.), Warner Co., Philadelphia.
Miller (D. J.), Portland Sand & Gravel Co., Portland, Pa.
Mitchell (Robert), Consolidated Rock Products, Los Angeles, Cal.
Mogan (J. T.), Consolidated Sand & Gravel, Ltd., Toronto, Ont., Can.
Murphy (James F.), Gallagher Bros. Sand & Gravel Co., New York.
Nordberg (Bror), Rock Products, Chicago.
Nunan (E. J.), Buffalo Slag Co., Buffalo.
O'Conner (A. J.), Detroit.
Osterholz (H. D.), Lehigh Portland Cement Co., New York.
Otton (Alfred S.), Robins Conveyors, Inc., Passaic, N. J.
Owens (H. V.), Eastern Rock Products, Inc., Utica, N. Y.
Pearson (H. P.), Kotal Co., New York.
Pelsue (H. F. G.), Metropolitan Sand & Gravel Corp., New York.
Phillips (Stanley A.), PIT AND QUARRY, Chicago.
Pederson (J. J.), Pederson Bros., St. Paul.
Popplewell (T. E.), Ft. Worth Sand & Gravel Co., Ft. Worth, Tex.
Price (J. P. Eyre), Wyoming Sand & Stone Co., Scranton, Pa.
Reid (J. H.), Consolidated Sand & Gravel, Ltd., Toronto, Ont., Can.
Reynolds (D. D.), Boston Sand & Gravel Co., Cambridge, Mass.
Richards (Jess), Link-Belt Co., Philadelphia.
Rockwood (Nathan C.), Rock Products, Chicago.
Ryberg (Eric), Utah Sand & Gravel Products Corp., Salt Lake City.
St. Jules (B. H.), Rock Products, New York.
Schmidt (F. W.), Morristown, N. J.
Shiely (A. R.), J. L. Shiely Co., St. Paul.
Shirey (C. W.), Waterloo, Ia.
Shugg (N. W.), General Electric Co., Schenectady, N. Y.
Snyder (Harris N.), Buffalo Slag Co., Buffalo, N. Y.
Spratlen (F. P., Jr.), Ready Mixed Concrete, Denver.
Spuehler (E. A.), Chain-Belt Co., Milwaukee.
Thompson (J. R.), Rock Products, Chicago.
Thomson (H. F.), General Material Co.
Trauffer (W. E.), PIT AND QUARRY, Chicago.
Ungar (F. B.), Ludlow Saylor Wire Co., St. Louis.
Warner (Irving), Warner Co., Philadelphia.
Warren (Ray V.), Pennsylvania Sand & Gravel Producers' Assn., Pittsburgh, Pa.
Webster (P. W.), War Production Board, New York.
Wilson (W. A.), PIT AND QUARRY, New York.
Wing (W. S.), Dixie Sand & Gravel Co., New York.

● Dr. Hansen Appointed

The appointment of D. I. Elder as research consultant, Universal Atlas Cement Company, at Buffington, Ind., and of Dr. W. C. Hansen as manager of Research Laboratories at Buffington, has been announced by G. L. Lindsay, Director of Tests & Research, New York. Mr. Elder started with the company as a chemist in 1925 at the Buffington plant, and has since held the positions of Research Chemist and Research Manager.

Dr. Hansen comes to the company from the Portland Cement Association in Chicago where he has been engaged for the past six years in a research capacity. Previous to a period of research and production outside of the cement industry, Dr. Hansen was connected with the Portland Cement Association's Fellowship at the National Bureau of Standards, Washington, D. C., where he pursued research on basic problems of the constitution of portland cement. He is a graduate of Montana State College with the degree of B. S. in chemistry. He served with the Chemical Warfare Service, A.E.F., in the first World War, and after his release from the army took graduate work at the University of Iowa and later at Columbia University, New York, where he received a Ph.D. in physical chemistry in 1922.

Dr. Hansen is the author of a number of publications on the constitution of cement and the durability of concrete. He is a member of American Chemical Society, American Association for the Advancement of Science, and the Illinois Academy of Science.

F. E. Schluter, President of Thermoid Co., Trenton, N. J., has announced plans to purchase Grizzly Manufacturing Co.'s West Coast plant and equipment located at Los Angeles, California. The purchase will include the complete line of Grizzly oil field, industrial rubber and aviation products and all patents covering those products—including inventories and accounts receivable.

This acquisition will supplement Thermoid's already broad lines of industrial rubber and oil field products. All Grizzly industrial rubber products—such as air hose, steam hose, suction hose, packings, transmission belting and conveyor belting—which had to be discontinued for war production will be manufactured in the Los Angeles plant after V-E Day.

Developments in the Manufacture of Better Refractories for the Portland Cement Industry*—Part Three

By LEOPOLD TSCHIRKY
General Refractories Company

another P AND Q exclusive

IN the previous articles we covered in quite general terms what is going on in the refractories industry in its effort constantly to improve its products to serve better the increasingly severe requirements of the Portland-cement industry. We also outlined the various functions of successive sections of the kiln and the service conditions the refractory lining is subjected to in those sections. It remains now to point out some features, facts and actual experiences that may aid in selecting the grade of refractory best suited to the service intended, and also, and every bit as important, to get the most out of it.

Inasmuch as the severity of service conditions affecting refractories becomes greater as temperatures in the kiln increase, we will approach this part of the subject by working our way from the discharge end toward the feed end of the kiln, and dwell on some items deserving attention.

Discharge-End Blocks.—Most often early failure of these blocks is the result of one of two principal causes, or a combination of both: (1) thermal spalling or cracking, and (2) cracking that is brought about by mechanical conditions that are altogether foreign to a direct refractory problem.

This cracking can sometimes be traced to bricks that are designed with so large a volume per unit that it is impossible to manufacture them with uniform burn and density throughout the whole mass, and this results in unequal expansion or contraction during the wide temperature fluctuations that take place when starting up and shutting down the kiln and obviously accelerates cracking tendencies. Such a design also often results in shapes that are likely to have bulged or warped surfaces which, if not compensated for when the bricks are laid in the ring, result in adjacent bricks resting against one another either with point or line contact. Under such circumstances when the kiln is heated up and the nose blocks go through their initial expansion, the pressure exerted is concentrated on those points or lines of contact and further accelerates cracking.

Nose blocks are usually designed with offsets provided to fit over retaining angles or rings. These offsets must, of necessity, be shaped and located to fit over fixed kiln-end metal construction. Sometimes this metal construction is such that it results in so intricate a nose-block design that the brick has very little chance of success in service. A typical illustration of such a design is shown in Figure 9. Such a brick can not help but be mechanically weak, with a good chance of cracking at the sharp corners where shrinkage strains occur even before the brick has ever been placed in service. These strains radiate from the sharp corners in a brick in the same manner that they do in a metal casting.

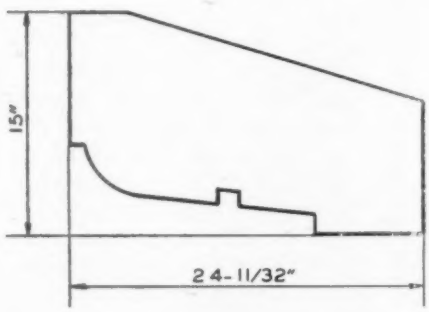


Figure 9.

It is suggested, therefore, that nose blocks be kept to a reasonable minimum volume and also that, when offsets are required to fit over metal construction, they be kept as few as possible, and that a radiused fillet be substituted for a sharp corner wherever possible. Also, when designing kiln-end metal construction consideration should be given to how it will influence the design of the nose blocks to fit over it.

Most of us have seen kiln ends that are badly flared out. This may be due to several reasons, some more easy to control than others. Granted that flared-out kiln ends may at times be the effect rather than the cause of nose-block difficulties, it is most usually the reverse. Often this can be traced to too heavy metal construction at the end of the kiln and too little provision for the expansion of this heavy construction. Kiln engineers and builders, as well as cement-plant operators, have done much to help this condition, which has had much attention focused on it in late years as a result of the trend to tight sealing of the kiln to the hood and the higher kiln-end temperatures that can be expected.

A good grade of first-quality (high-heat-duty) fire-clay brick, possessing good mechanical strength and thermal spall resistance, will be found satisfactory in most cases. In a few instances, where unusually severe service conditions exist, super-duty fire-clay bricks or unburned-magnesite bricks are preferred, the choice depending on whether high thermal spall resistance or extremely high refractoriness, respectively, is the paramount consideration.

Burning Zone Lining.—It is no exaggeration to say that in all the industries using refractories, with the many different kinds of furnaces employed, no one presents a more severe refractories problem than is encountered in the burning zone of a rotary cement kiln. To many it may appear not only as a severe problem, but also as a complex and very perplexing one—complex, not only because of the many factors that are involved, but also because of the wide range of products being successfully used in different plants; perplexing, because lining life on any one grade of refractory has been known to vary widely under what on the surface appear to be quite identical operating conditions—often in kilns in the same plant where the design and layout, as well as operating conditions, are as alike as it is possible to make them.

The grades of refractory brick most usually used for burning-zone

*Presented before the Technical Committees, Portland Cement Association, September 19, 1944.

lining, in the order of their ability to withstand severe service, are

Unburned-magnesite Brick—Basic Brick
70% Alumina (Al_2O_3) Brick
60% Alumina (Al_2O_3) Brick
50% Alumina (Al_2O_3) Brick
High Alumina Brick
40% Alumina (Al_2O_3) Brick
Fire-clay Brick

with very little, if any, difference between the last two.

Protective Clinker Coating.—Irrespective of what grade of brick is used—whether basic brick, high-alumina brick or fire-clay brick—the success of the lining in service is dependent almost wholly on its ability to build up and maintain protective clinker coating at the temperature carried in the burning zone of the kiln. The problem of selecting the lining material that holds out most promise of success then resolves itself into finding the refractory lining material which under known conditions of operation will satisfactorily build up and maintain protective clinker coating, remembering always, of course, that the first cost of the lining and its effect on the over-all cost per unit of clinker produced must also be taken into consideration.

Considering only the matter of the lining's ability to build up and maintain a satisfactory protective clinker coating, a principal consideration is the temperature at which the lowest fusing mix of clinker and brick will form a fusible mass. A great many fusion tests have been made of mixes of cement clinker with brick in the various classifications listed above, but for the sake of this discussion the remarks that follow will be confined to the tests made using fire-clay brick (of approximately 40 per cent. Al_2O_3 content), high-alumina brick (of approximately 70 per cent. Al_2O_3 content) and unburned-magnesite brick.

Fusion Tests.—The cement clinkers used for these fusion tests included several typical of the grades known as normal clinker, high-early-strength clinker, low-heat-of-hydration clinker, oil-well clinker, and other grades of so-called modified clinker. These clinker samples were obtained from cement-manufacturing plants located in widely-separated producing areas, namely, eastern, south Atlantic, middle western, southwestern and west coast producing areas. Coming, as they did, from such widely-separated producing areas, the results afford a good cross-section for the entire cement industry. The analyses of all these cement clinkers fell within the following range:

SiO_2	19.95	to 26.06	per cent.
Fe_2O_3	1.99	to 5.89	per cent.
Al_2O_3	4.08	to 7.80	per cent.
CaO	63.73	to 68.98	per cent.
MgO	0.80	to 3.14	per cent.
Free lime	0.61	to 1.55	per cent.

Seventy-two separate tests were made and the summary result of all these tests is shown in Figure 10. The tests showed that, except in the case of the unburned-magnesite brick, mixtures of cement clinker and brick will form with fusion temperatures lower than the temperature at which cement clinkers of to-day are being burned, the fusion temperatures of mixes using 70 per cent. alumina fire-clay brick going as low as about 2,250 degrees F. The fusion temperatures of mixes using 70 per cent. high-alumina brick show considerable improvement with the low fusion temperatures averaging about 2,500 degrees F., which, however, is still much-under modern burning-zone temperatures. The mixes of cement clinkers with unburned-magnesite brick show very high fusion temperatures, all exceeding 3,335 degrees F.—the highest temperature attainable in the testing apparatus and a temperature higher than is ever reached in a cement kiln.

In the light of these results it may seem strange that the few cement plants still using fire-clay brick linings and the many that are using high-alumina brick linings find these lining materials satisfactory in spite of the fact that their burning-zone temperatures are in excess of the fusion temperature of the low fusing mix of their clinker and these bricks. That these plants do get satisfactory lining life is due simply to the fact that conditions in these plants are such that a protective clinker coating can be, and is, built up on these lining materials to a sufficient thickness and retains such a thickness that the temperature drop through the protective clinker coating to where the coating is adhering to the lining is sufficient that in the region or zone of coating attachment the temperature is actually lower than the fusion temperature of the low-fusing mix of clinker and brick lining. If, however, conditions should occur in these plants to disturb this temperature balance, due perhaps, to the coating leaving the brick lining or becoming thin, or if for some reason the temperature in the burning zone rises beyond what normally is carried, then one of two things must take place if the lining is to render a reasonable amount of additional service. First, a protective clinker coating must be built up again on the lining—and rapidly—to a degree that again makes possible the lowering of the temperature in the region or zone of clinker attachment to below the fusion temperature of the low-fusing mix of clinker and brick. Or, second, if the latter does not take place, then brick-lining thickness will disappear rapidly until the lining has become so thin that the cooling action from the outer shell will cause the temperature on the inside face of the lining to fall below the fusion temperature of the low-fusing mix of clinker and brick. When the latter takes place, a protective clinker coating will again start to build up. It is unfortunate that often when this stage is reached the lining has become so thin that the safest procedure is to renew the lining.

The test results also indicate why basic brick can be expected to render satisfactory service under burning-zone conditions that are too severe for high-alumina-brick linings. ings.

So, in choosing a burning-zone lining material it is good to know the temperature that must be reached satisfactorily to burn the material charged into the kiln and, also, to have a fairly good idea of the effect on fusion temperature of varying mixes of the load material and the refractory under consideration.

Slagging Tests.—Tests have also been made to study the relative slagging effect of many different cement clinkers on refractories used for burning-zone linings. For these tests bricks were drilled to form a pocket 2½ inches in diameter and ¾ inch deep. The pocket is then filled with finely-ground clinker, the bricks and clinker are placed in the test furnace, heated gradually and uniformly to 2,800 degrees F. over a period of 4 hours and held at 2,800 degrees F. for a further 4 hours. The bricks are allowed to cool and are fractured through the pockets to observe the action which has taken place.

Typical results obtained in these tests are shown in Figures 11, 12 and 13. Figure 11 is a fire-clay brick (40 per cent. Al_2O_3). The cement clinker has vigorously reacted with the brick to form at test temperature a mix which became a fluid mass. On cooling this fluid mass became a blackish substance which on fracture is a solid, shiny, glass-like mass. In view of the density of the fire-clay brick used in the test there is little sign of the molten material having been absorbed into the brick.

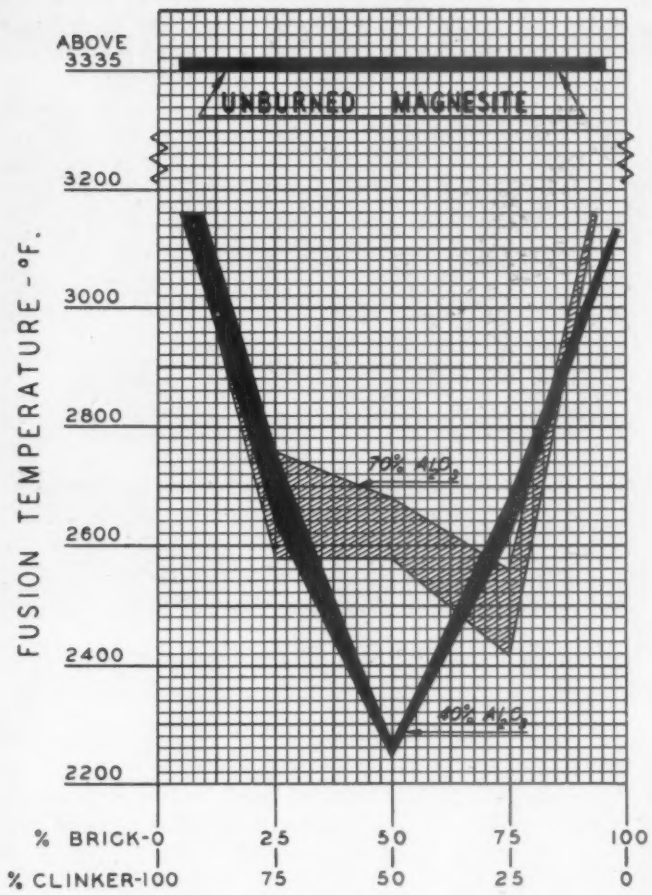


Figure 10 (above).

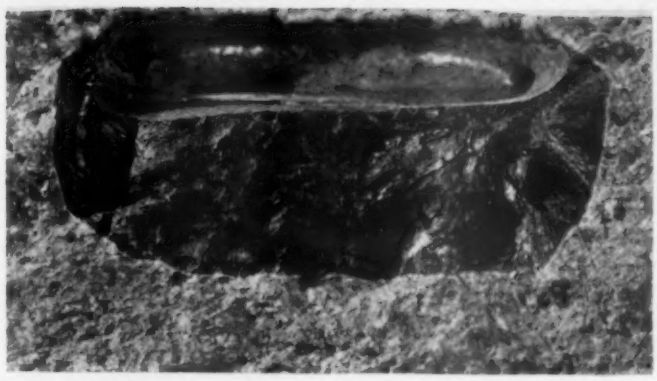


Figure 11.

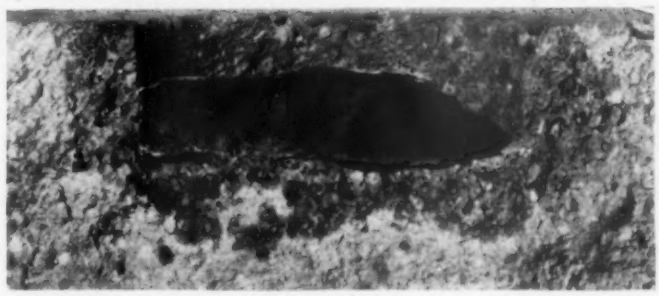


Figure 12.

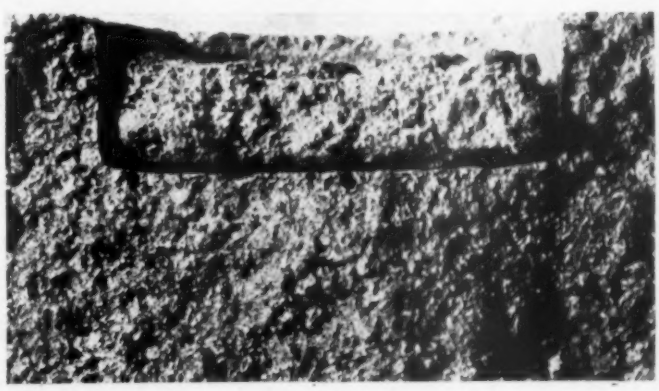


Figure 13 (right).

Figure 12 is a high-alumina brick (70 per cent. Al_2O_3). The cement clinker has attacked the brick and caused the pocket to be deepened somewhat. The clinker has not fully combined with the brick, but what fluid mass did result has been absorbed in the pores of the brick.

Figure 13 is an unburned-magnesite brick. The cement clinker has not attacked the brick. The clinker can be seen as a sintered mass resting loosely in the bottom of the pocket.

These slagging tests, together with the fusion tests, give good indication of the relative resistance to fluxing action of refractories of the grades or classifications employed in the tests in the presence of cement clinker at high temperature. The more resistant the refractory is to fluxing action, the more readily it should take protective clinker coating and maintain the coating; also, if during operation the coating is lost, less lining thickness will be fluxed away before a new coating is formed.

Interesting as all these tests are, the results described are quite in line with what one would expect to obtain for the comparative behavior of all the bricks used in the tests and can be well forecast when considered from the viewpoint of the phase-rule diagrams of the systems lime-alumina-silica and lime - magnesia - silica shown, respectively, in Figures 2 and 3. (See a previous article in this series.) They are marked to show the areas in the phase-rule diagrams within which the various compositions which might be formed with mixes of cement clinker and brick would fall. The fusion points taken from these diagrams would, of course, be lower in practice due to the added fluxing action of impurities.

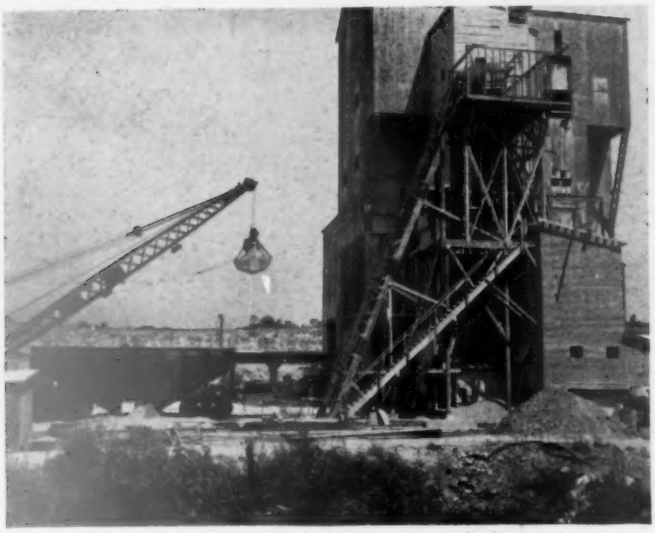
It has been stated that in the slagging tests cement clinker did not attack the unburned-magnesite brick, also that at the end of the tests the clinker was found as a sintered mass resting loosely on the unburned-magnesite brick. This may raise the question as to whether, if the clinker and brick do not react to form a slag on the surface of the brick, the brick would actually take a protective clinker coating in service. The answer is that they do. The reason is that the load material in a cement kiln does not require a slagged surface to cement the coating to the brick. The charge, in passing through the burning zone of the kiln, develops the power of agglomerating, which causes the load particles to adhere to the unburned-magnesite brick despite the fact that there is no sticky slag surface on the lining. They will do this in exactly the same manner as they do to form the clinker lumps that are discharged from the kiln. Were this not so, the discharge from the kiln would be as finely-powdered a material as that charged into the kiln.

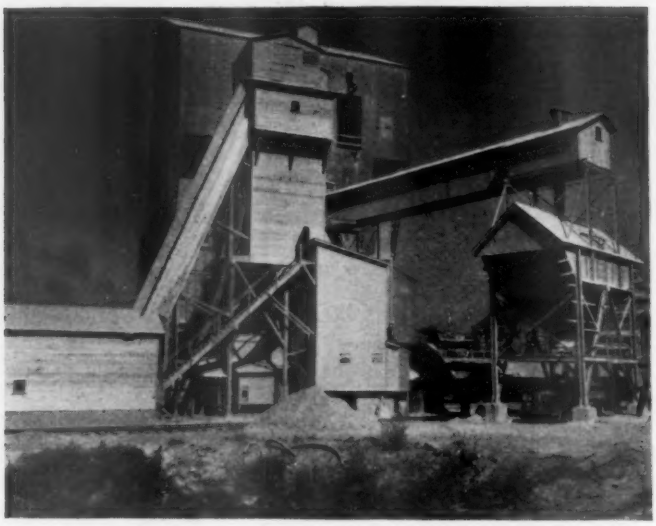
Petrographic and chemical examinations of brick linings and the adhering clinker coating after such linings had been through campaigns have also contributed greatly to the knowledge of the relative behavior of different refractories in service.

Much information is therefore available to guide one in selecting burning-zone lining material with a reasonable likelihood of choosing

(*Continued on page* 84)

Krause Plant Completed in Two Months





• Left: After new equipment was in operation. Above: Enclosed weather-protected plant.

That there are quick-change artists even in the nonmetallic-minerals field is evidenced by the above photographs. The picture on the left, taken in August, shows the completely revamped agstone department at the Krause, Illinois plant of the Columbia Quarry Company shortly after the new equipment was placed in operation. The pulverizing plant was completely described in the November issue of PIT AND QUARRY. The photograph on the right was taken two months later and shows the changes that have been effected in that period. A 200-ton steel bin has been set up on the right for loading trucks to relieve congestion under the main track bins. The new bin is supplied directly from the pulverizing plant by means of a Stephens-Adamson 24-inch belt conveyor extending across the intervening tracks. In addition to the building proper, the bucket-elevator and the track hopper have all been totally inclosed for weather protection, to present the unusually neat and trim appearance suggested by the photograph.

Ancient Quarry Becomes Tourist Mecca

By ALONZO W. POND

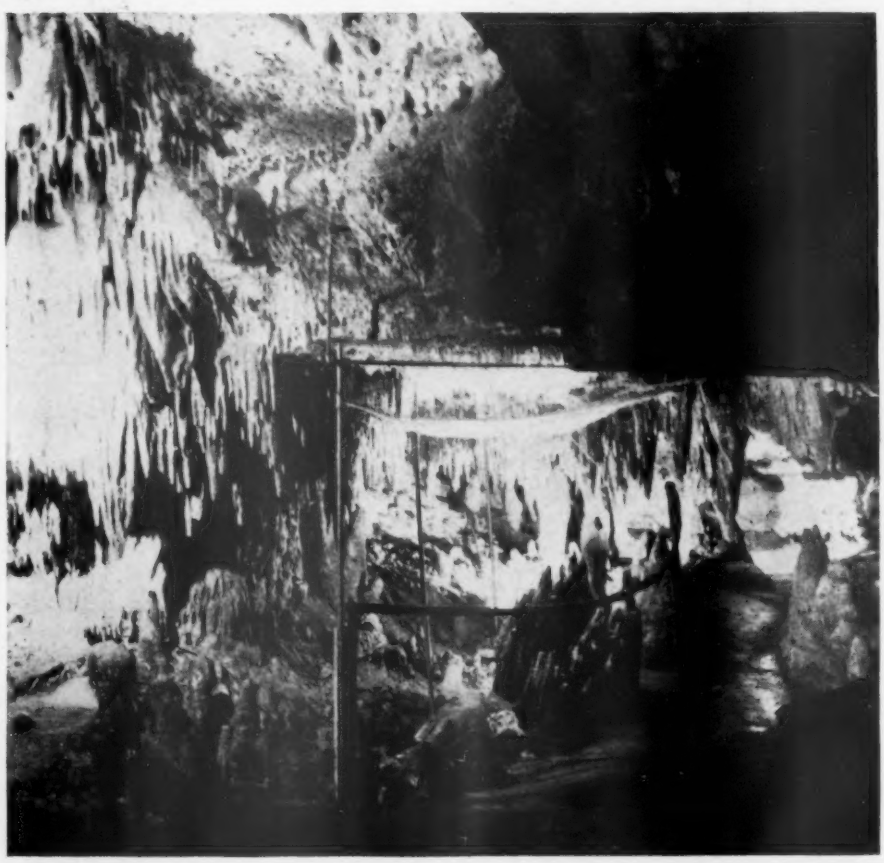
another P and Q exclusive

WHEN an abandoned limestone quarry becomes a scenic attraction for hundreds of thousands of visitors, that's news! Such has been the destiny of the old quarry on the C. I. Brigham farm near Blue Mounds, Wisconsin, which was described in the September, 1941, issue of PIT AND QUARRY.

On August 4, 1939, a 1,600-pound charge of 40 per cent. dynamite broke out 5,000 tons of limestone for Wisconsin roads, but it also opened the now famous Cave of the Mounds. Even in these days of limited automobile travel 1,200 to 1,500 visitors a week walk through the old quarry to visit the subterranean fairyland.

Since the Cave of the Mounds was opened to the public on May 30, 1940, well over one-quarter of a

(*Continued on page* 84)



• The Chapel and Narrows in Cave of the Mounds, 25 miles west of Madison. It can be reached on highways 18 and 151.

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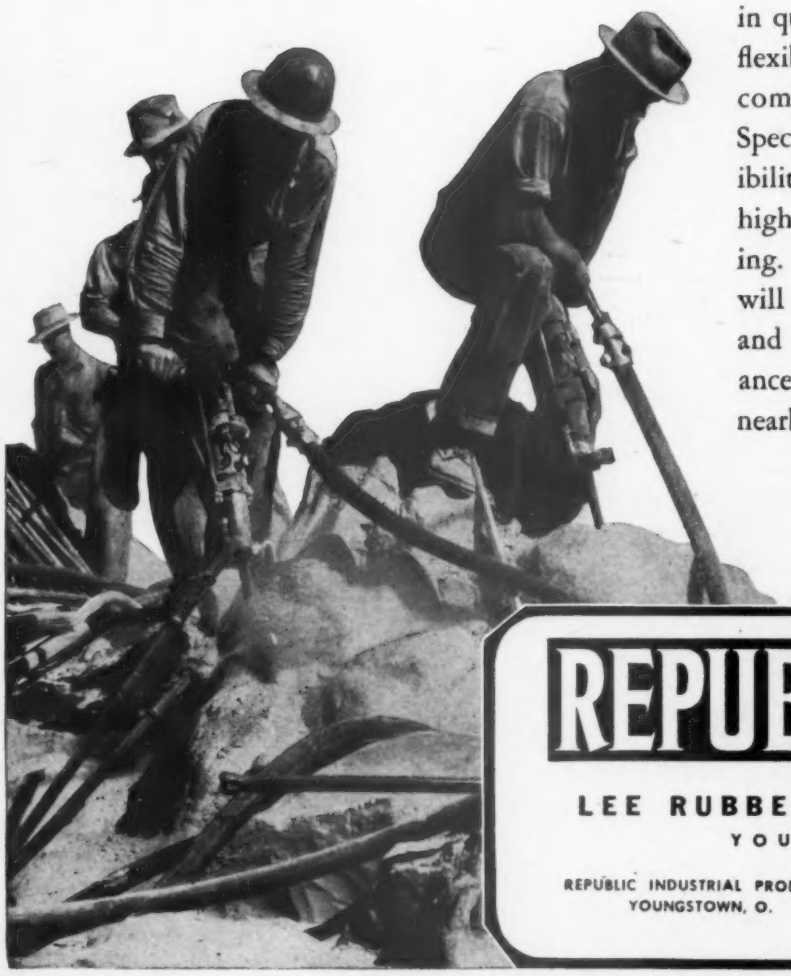
Tower Air Hose is "better than before" . . . recently improved through application of technological advances in synthetic rubber. This tough, rugged hose will take severe abuse in quarrying and similar services, yet it is flexible and easy to handle. Its tube is compounded to resist oil and heat. Special braided cord reinforcing adds flexibility and strength for resistance against high working pressures, shock and crushing. The tough, abrasion-resisting cover will stand dragging over rock, concrete and steelwork. For outstanding performance and economical service, ask your nearby Republic Distributor for Tower.



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Ancient Quarry (*from page 82*)

million visitors (285,522 to be exact) have seen its beauties. They have come from every state in the United States and from a score of foreign countries. Service men and women home on leave or stationed at military camps around Madison, Wisconsin, and their relatives account for many of the out-of-state registrations now. But whether they come from the Aleutian Islands or the beach heads of Italy they wonder "that so much beauty could exist behind an old quarry."

Attendance figures for Wisconsin's newly discovered natural wonder have broken many records.

The Hall of Statues is filled with many rare formations.

During the second year the cave was open there were 118,000 visitors. Single days during the week often ran 800 or 900 and during the summer there were nine Sundays with more than 3,000 visitors each. August 31, 1941, the Sunday before Labor Day, the records show had 4,279 visitors. On such days there are two continuous streams of humanity walking in and out of the caverns.

The cave has been made easily accessible with board walks, railed stairways and artistic electric lighting. The usual trip with a guide requires about 30 minutes, but there is so much to see that hundreds of visitors come back time and time again to bring their friends.

Geologists and students find all the usual cave formations at the Cave of the Mounds and many which are extremely rare. There are stalactites, stalagmites, and helictites, of course, but there are also cave pearls, tiny balls of cave onyx formed layer on layer around grains of sand. There are bleeding stalactites with veins of color and black and white ribbons of stone found nowhere else except in a cave in Iceland. Tiny underground pools of water, "petrified water falls", lily pads of stone, "rivers" of onyx, black stalactites and a massive travertine ridge with towers and pinnacles are just a few of more than four score different types of cave deposits.

Quarry men are particularly interested in the 6-foot fossil cephalopod exposed in the ceiling at the Cave of the Mounds because it identifies the formation as Galena (Trenton) limestone.

All visitors, quarry men and the general public, like to speculate on "What lies beyond the blockade at the south end of the cavern." That is a job for more dynamite and postwar planning. For the present visitors get a real "lift" from the "out-of-this-world" beauty found in the subterranean passages at the Cave of the Mounds, Wisconsin.

Refractories (*from page 81*)

correctly. However, it is good to keep in mind that there are numerous other factors involved in the operation of a cement kiln which in the strict sense of the term are actually not a refractories problem even though they singly, or in combination, can, and usually do, have a very decided effect on ultimate burning-zone lining life. The perplexities of burning-zone lining performance, no doubt, can frequently be traced to some of these other factors—may of which are extremely difficult to control.

(*To be continued*)

• Change Corporate Name

Sturgeon Bay Company, Cleveland, has changed its corporate name to Drummond Dolomite Incorporated by R. S. Geddes, president, recently announced. Officers, directors, and ownership remain the same. An additional quarry has been opened on Drummond Island at DeTour, Michigan. From this quarry, located near the mouth of the St. Mary's River—the Times Square of the Great Lakes—convenient delivery is available by boat, self-unloader or bulk, throughout the Great Lakes. Production from the new quarry will be limited solely to engadine dolomite. 1945 production has been fully committed for.

• Your country is still at war, —are you?

A Boost for the Cement Industry

The thousand and one ways in which cement has contributed to our modern high standard of living are often taken for granted and given little public recognition. To help the cement industry tell its story, Bemis Bro. Bag Co. placed the full page advertisement "I Told Him You Didn't Order Any Cement" before the 1,800,000 readers of Time, Business Week and Newsweek.

You can help tell the cement industry's story to even greater audiences by displaying poster-size, 2-color enlargements (17 x 22 inches) of this advertisement. We will send you as many copies as you can use. All advertising will be deleted, of course. Send the coupon below today.

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We will use_____copies of poster "I Told Him You Didn't Order any Cement." Please send to—

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"I told him you didn't order any CEMENT

...BUT HE INSISTS THESE FOUR BAGS ARE FOR YOU"

Whoever you are—businessman, lawyer, housewife, druggist, student, it makes no difference—did you know that four bags of cement are made for you every year?

You may not buy it... or even see it ...as cement. But the American portland cement industry, in normal times, annually produces approximately four bags for every man, woman and child in the United States. And you certainly use your share, and more. There's scarcely a minute that you aren't enjoying the advantages of this versatile, long-lasting, firesafe plastic.

Think it over. The buildings you live, work, play and worship in... cement used a score of ways. The farms your food comes from... barns, milk house, silos, tanks—a hundred uses. Your water supply... filtration beds, reservoirs, pipe, pumping stations. The factories, mill and stores that supply you... more cement. Nearly everything you use travels over concrete roads, on railroads that use concrete scores of ways, or by planes that land on concrete runways. And you yourself walk and ride on concrete every day.

Yes, waking or sleeping, you're making good use of your four bags of cement. It's as ever-present as the air you breathe ... and you're almost as dependent on it.

The Cement Industry, using hundreds of millions of paper and cotton bags a year, is one of the many Bemis has served for scores of years.

Bemis makes cotton, burlap and paper shipping bags for almost limitless types and sizes for literally hundreds of different uses... and new uses are developing constantly. Almost everything you eat, wear or use may make at least part of its trip to you in a Bemis Bag.

BUY AN EXTRA WAR BOND TODAY... AND KEEP IT!

BEMIS BRO. BAG CO.

GENERAL OFFICES: ST. LOUIS

Burlap, Cotton and Paper Bags

23 PLANTS THROUGHOUT THE COUNTRY

An Over-all Picture of Construction for 1944 as Reported by the W. P. B.

This factual presentation of construction activity during 1944 gives also a comparison with 1943 and a preview of expected volume for the current year.

PRELIMINARY estimates of new construction put in place during the year 1944 indicate a volume of $3,840,000,000, compared with the $3,900,000,000 programmed for this year in August 1943, the War Production Board has reported.

This volume is not quite half the 1943 total of $7,732,000,000 and less than one-third the 1942 peak activity of $13,434,000,000.

Work financed by public funds accounted for only 61 per cent. of the 1944 total activity as contrasted with nearly 80 per cent. in 1942 and 1943. Activity volume for all major types of construction was less in 1944 than in 1943, with the sharpest decrease occurring in military construction (troop housing, airfields and bases, storage facilities, etc.) which declined to $730,000,000 from the $2,423,000,000 volume of 1943. Construction volume at government-financed industrial plants reached $735,000,000 for the year. This governmental industrial work represents only 37 per cent. of the 1943 activity of $1,973,000,000 and 21 per cent. of the $3,485,000,000 factory volume of 1942. Deliveries of machinery and equipment to government-financed plants in 1944 were down to 35 per cent. of the 1943 rate.

New-housing activity in 1944 is amounting to $685,000,000, slightly more than half the 1943 volume, with the biggest drop occurring in the government-financed segment which was down to 27 per cent. of the 1943 volume. All other non-industrial construction — comprising highways, community buildings, sewer and water, conservation, utilities, farm and other non-residential work — registered a volume of $1,505,000,000 in 1944, or 84 per cent. of the 1943 volume. Private work in this category (farm, utilities, and community buildings such as hospital, educational, and social and recreational structures) totaled $804,000,000, which was 8 per cent. over the activity for these types during 1943; publicly-financed work was down 33 per cent. from the 1943 level, with the sharpest declines occurring in highways, conservation work, and public pipe-line construction.

New construction volume in November amounted to $297,000,000, a 7 per cent. decline from October and 32 per cent. under the activity of November, 1943. Military and government-financed industrial construction during the month continued at the October levels, but housing, privately-financed industrial and other types registered seasonal declines. Over-all activity during December is expected to decline 11 per cent. from the November level.

Should "Victory in Europe" Day come in the spring, preliminary estimates indicate a volume of approximately $4,000,000,000. However, should both theaters of war continue at full force throughout the year, it is anticipated that construction activity will amount to about $3,150,000,000.

The table below presents the breakdown of these two 1945 estimates by type of construction, together with the corresponding activity accomplishment in 1943 and 1944. The figures exclude repair activity, and in this respect differ from construction activity estimates compiled by other federal agencies.

ESTIMATED NEW CONSTRUCTION ACTIVITY IN THE UNITED STATES 1943—1944—1945

Type of Construction	1943	1944	1945	
			Full-Scale War Through the Year on Two Fronts	Assumes Defeat of Germany in the Spring—War with Japan Continuing
TOTAL CONSTRUCTION	*$7,732,000*	*$3,840,000*	*$3,150,000*	*$3,950,000*
Total Public	6,144,000	2,354,000	1,680,000	1,860,000
Total Private	1,588,000	1,486,000	1,470,000	2,090,000
Military	*2,423,000*	*730,000*	*480,000*	*450,000*
Housing	786,000	222,000	135,000	125,000
Aeronautics	1,059,000	298,000	195,000	180,000
Other Military	578,000	210,000	150,000	145,000
Industrial	*2,198,000*	*920,000*	*595,000*	*725,000*
Publicly Financed	1,973,000	735,000	400,000	375,000
Privately Financed	225,000	185,000	195,000	350,000
Housing	*1,318,000*	*685,000*	*525,000*	*775,000*
Publicly Financed	702,000	188,000	75,000	75,000
Privately Financed	616,000	497,000	450,000	700,000
All Other	*1,793,000*	*1,505,000*	*1,550,000*	*2,000,000*
Public	1,046,000	701,000	725,000	960,000
Community Buildings[1]	124,000	120,000	125,000	160,000
Highways	410,000	318,000	325,000	450,000
Sewer and Water	95,000	79,000	80,000	100,000
Conservation	244,000	142,000	150,000	185,000
Other Non-residential	173,000	42,000	45,000	65,000
Private	747,000	804,000	825,000	1,040,000
Community Buildings[1]	96,000	133,000	145,000	200,000
Farm	160,000	170,000	195,000	245,000
Utilities[2]	491,000	501,000	485,000	595,000

[1] Schools, hospitals, recreational, commercial, and religious structures.
[2] Railroads, gas, pipe lines, electric light and power, telephone and telegraph.

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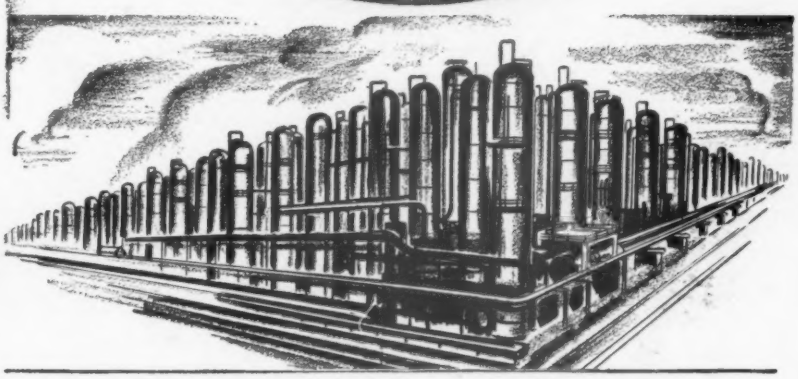

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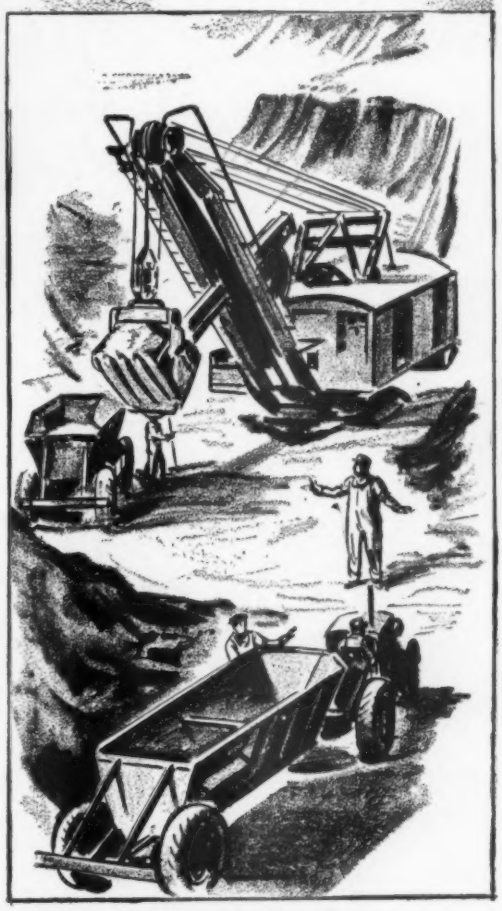

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PERSONAL MENTION

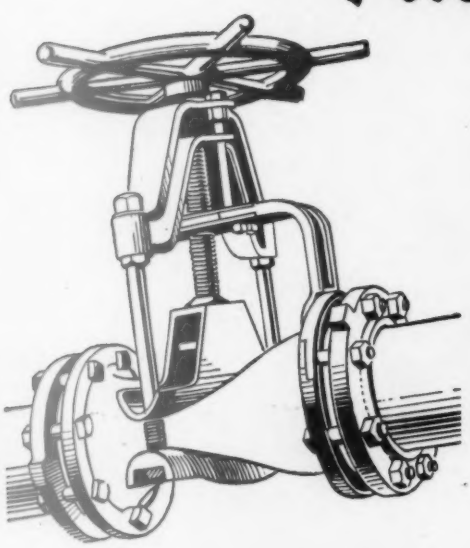
A. B. MACK, vice president of the Kelley Island Lime & Transport Company, Cleveland, has been elected executive vice president and H. M. Beatty, vice president in charge of operations, Ralph L. Dickey, president, announced today.

For the past 32 years Mr. Mack has served the company in many capacities. During the past four years Mr. Beatty has progressively served as industrial sales manager, general sales manager and assistant to the president on operations.

HUBERT O. DEBECK, recently technical assistant to the president of Colonial Mica Corp. in New York City and formerly Western manager, with headquarters in Custer, S. D., has become associated with Mrs. Gladys Wells and Kem Koch in the new firm of Custer Non-Metallics. Mrs. Wells and Mr. Koch have long operated a well-established mica business.

MASSCO-GRIGSBY

Pinch VALVES



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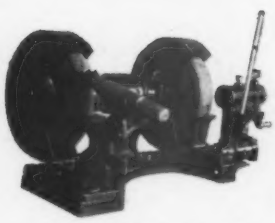
NO METAL CONTACTS PULP OR LIQUID

Useful for solutions which are highly corrosive or which crystallize at normal temperatures and must be handled at up to 300°F; or for mixtures of solutions or solids which are both corrosive and abrasive.

Recommended for transfer lines, controlling flow in plant, delivering product to storage or cars or for handling fine dry materials. Valve shuts tight on solid particles.

These valves resist wear **more** than metallic parts of gate or plug valves. No packing glands. Freezing temperatures will not destroy sleeve. Easy to operate.

1", 2" and 3" for continuous pressures to 100 lbs.; 4", 6", 8", 10" and 12", up to 150 lbs. Send for illustrated folder.



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W. FRANK ALFORD has been appointed superintendent of all plants of Consolidated Quarries Corporation, Decatur, Georgia, it was recently announced by Nelson Severinghaud, general manager.

HARRY H. MITCHELL, vice president in charge of finance of General Crushed Stone Co., Easton, Pa., died recently at his winter home in Eau Gallie, Fla. He was 85 years old.

H. H. PURKHISER, 59, superintendent of the Lehigh Portland Cement Company, Mitchell, Indiana, died recently of a heart attack at Jackson, Tennessee, where he had been visiting friends over the holidays. Surviving are two sons, a daughter and a sister.

ALFRED B. RUHLY, 62, auditor and office manager of the Huron Portland Cement Company, Detroit, passed away January 3, after a short illness. He is survived by his wife, two sons and a daughter.

JESSE J. CALDWELL, an employee of the Atlas Portland Cement Company and later Universal Atlas for almost 39 years, passed away recently at Waco, Texas, where he had lived for the last sixteen years. He began as accountant for the company in 1905 at Hannibal; and in 1928 he was transferred to Waco, where a new plant was being built, as auditor of the plant there. Early this year he retired because of ill health.

NELSON E. MCLOON, 70, of Eureka, Missouri, and for 30 years superintendent of the Glencoe Lime and Cement Company, St. Louis, died recently. He is survived by his wife.

BURL VANCE HEDRICK, 68, owner of the Hedrick Sand & Gravel Company, Lilesville, North Carolina, died Christmas morning in an ambulance which was taking him from a Salisbury hospital to Charlotte for treatment of a throat ailment. In 1930 he organized, at Lexington, a construction company bearing his name; and later the B. V. Hedrick Sand & Gravel Company, which is now a great plant covering 2,000 acres and is engaged in war contracts. He is survived by his widow, two daughters, two sisters and five brothers.

EARL A. BURR, 66, vice-president of the Cleveland Quarries Company, passed away recently, following a long illness. He began his business career as assistant auditor of the Cleveland Stone Company, later the Cleveland Quarries; in 1928 he was elected secretary, and 10 years later became vice-president. He is survived by his widow and a daughter.

RAY F. RUCKER, former Hannibal resident, died recently in his home in East St. Louis. From 1906 to 1910 he was in charge of the shale mines and rock quarries operated by the Atlas Portland Cement Company in Hannibal; he later became assistant superintendent. In 1910 he went with the Lehigh Portland Cement Company, East St. Louis; subsequently he became associated with the Aluminum Ore Company there as superintendent.

THOMAS HOWIE SUTTON, 60, southern sales director for the Louisville Cement Company, recently died at his home in Fayetteville, North Carolina.

CLYDE T. MORGAN, 51, died suddenly January 6, at his home in West Aslieville, North Carolina. He was employed as an accountant by the Colonial Mica Corporation.

CHARLES HERR, age 79 years old, for many years associated with the Tell City Sand and Gravel Company, Tell City, Indiana, and a member of an old Tell City family, died at his home recently in Tell City.

H. P. BENNETT, 70, president of the Bennett Concrete Stone Co., of Cleveland, died at his home there Dec. 9.

Besides heading the company bearing his name, which he founded 36 years ago, Mr. Bennett also was president of the Hugo Sand Co., of Kent, O. Born and educated in Cleveland, he was widely known in the building supplies field there.

Surviving are his wife, Mrs. Mary Lewis Bennett; his daughter, Mrs. Gwen Stephens, and two sons, Lewis H. Bennett and Sgt. Harry P. Bennett of the Army.

FREDERICK AUGUSTUS HOEFER, 70, Columbia, South Carolina, president of the Southern Silica, Mining and Manufacturing Company, died recently at his home there.

J. W. GILLESPIE, southwestern representative for the Flexible Steel Lacing Company of Chicago, died recently at the age of 53. He has been a resident of Dallas, Texas, for the past eight years and was widely known in Texas, Louisiana, Arkansas and Oklahoma by mill supply, hardware, and industrial men. He is survived by his wife, Georgia, and a son, Lieutenant James W. Gillespie of the U. S. Army.

J. BERNARD MCCABE, 54, for the last six years sales engineer with the North American Refractories Co., Cleveland, O., died in a hospital there Jan. 10.

Born in Rochester, N. Y., Mr. McCabe was engaged in the contracting field there before going to Cleveland seven years ago. He was a member of the Cleveland City Club and of the Elks.

Surviving are his wife, Mrs. Lena McCabe; two daughters, Mrs. Esther Baker of Euclid, O., and Mrs. William Persic of Garfield Heights, O., and four grandchildren.

Farm Liming Program Studied at Ohio Meeting

A meeting of manufacturers and distributors of liming materials was held January 5, 1945, at Ohio State University, Columbus, Ohio. Some of the points discussed were that only about one Ohio farm in five was holding its own in regard to soil fertility with the soils on other farms getting poorer; and that the use of liming material by itself, increased the returns over and above the cost of liming. It was pointed out also that liming materials gave a much higher return when used with a good rotation and livestock program.

It was reported that considerable progress had been made during the year in spreading the demand for liming materials. Various forms of publicity were used, including poster advertising and letter stickers. The Government liming program aided materially in this respect.

In discussing the tremendous needs of Ohio soils for liming materials, it was stated that agronomists had estimated, from numerous tests of each soil type in the State, it would take a total application of 30,000,000 to 35,000,000 tons of limestone to give all Ohio soils the ability to produce satisfactory crops of clover and alfalfa. In addition to the base requirement of thirty to thirty-five million tons, an annual application of from 1,500,000 to 2,000,000 tons would be required to replace the lime being lost from all crop lands through cropping, leaching, and erosion. In view of these great needs for lime, an immediate post war annual goal of 4,500,000 tons of liming materials for Ohio has been suggested.

It is a tremendous task to move this amount of material and it was pointed out that many sources of supply should be used. Stock piles should be built up at central delivery points and railroads should provide land for this purpose.

Several speakers called attention to a so-called "time lag" of three to four years before the farmer has cashed in on his lime investment and has money to buy more. It was proposed that term credit be established by financial agencies whereby farmers could pay part of their loans each year over a three or four year period. It was explained that such paper is rediscountable at Federal Reserve Banks.

The AAA reported it had furnished about 700,000 tons of liming materials in Ohio last year and that, roughly, a similar amount had been purchased direct from manufacturers by farmers.

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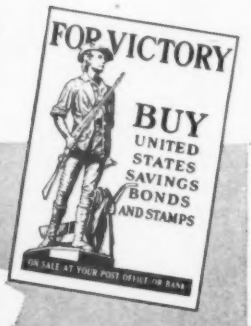

CARVER CENTRIFUGAL CERTIFIED PUMPS

Legal Decisions

By LEO T. PARKER

●

Scope of Employment

An employee who is injured "outside" the scope of his employment cannot recover compensation under state compensation laws.

In determining, therefore, whether an accident "arose out of" the employment, it is necessary to consider this: (1) Was the employee then engaged about his employer's business and not merely pursuing his own business or pleasure; and (2) did the necessities of that employer's business reasonably require that the employe be at the place of the accident at the time the accident occurred?

Another important point of law is that the law recognizes two distinct exceptions to the general rule that to be compensable an accident must occur on the premises of the employer during work hours. These are: (1) Where the master furnishes transportation to and from work, and (2) where the injury occurs near to the master's place of business and results from a hazard to which the employee was exposed because of his employment, such hazard being greater to him than to members of the public generally.

For illustration, in Dick *v.* Gravel Company, 152 La. 993, 95 So. 99, 101, the higher court in forceful language enunciated the underlying philosophy of the Employer's Liability Act and fixed therein a sane and generous rule of controlling influence. This court said:

"The object of the statute is to shift the burden resulting from the accidents of our intense industrial activities from the employer to the general public. It is humane in its purpose, and its scope should be enlarged rather than restricted. Its provisions should be liberally construed, so as to include all services that can be reasonably said to come within them."

Court Believes Testimony

According to modern higher courts the testimony presented by physicians is more impressive and given greater consideration than evidence presented by an employee who sues to recover compensation based upon silicosis disease.

For example, in *Kentucky Stone Company v. Phillips,* 172 S. W. (2d) 216, it was shown that an employee named Phillips filed suit for compensation against the Kentucky Stone Company, with the Workmen's Compensation Board, claiming that on and before January 15, 1939, he "suffered permanent impairment of his lungs and body by reason of breathing limestone dust". The application for compensation was based on the contraction of silicosis.

Immediately following the suit he was examined by two physicians who reported in writing that Phillips was not suffering from silicosis or tuberculosis.

However, Phillips introduced testimony proving that he had worked in the quarries for more than fifteen years. During this period he had worked in the quarries he inhaled limestone dust and dust from emery wheels. Phillips introduced further testimony that he was a

powerful man, weighing approximately 230 pounds in 1938, and that soon afterward the elevator hung and some sheets from buckets were dented. He straightened the buckets with a sledge hammer and got very hot while so doing. He then went up on top of the crusher where he breathed limestone dust and cooled off quickly, started choking up, caught cold and could hardly breathe. He was off from work for several days. He started losing weight, going down to 175 pounds and since then, according to his statement, he has "never had any breath to breathe".

In refusing to allow compensation, the higher court said:

"It may well be doubted that there was any evidence of substance to the effect that the appellee's (Phillips) trouble was caused from breathing the limestone or emery dust, since Dr. Hoskins steadfastly refused to express his opinion that the breathing of dust at the time appellee got hot and cooled off suddenly was the cause of his condition. The most he would say in this connection was that the trouble could have been thus caused. Certainly, in view of this situation, there was no evidence of substance that the appellee's trouble resulted from breathing the limestone dust while he cooled off quickly on the occasion referred to by him."

With respect to classification of a disease caused by inhaling dust, this higher court said:

"It seems rather incongruous to say that an injury caused by breathing dust over a period of years is an accidental injury. To hold such an injury accidental would practically nullify the statute in this regard and open the door to compensation of occupational diseases, a result clearly not contemplated by the statute."

Also, see Pennsylvania case of *Mauchline v. State Insurance Fund,* 279 Pa. 524, 124 A. 168, 169. This court said:

"To be an accident, within the Workmen's Compensation Law, the injury must usually result from some undesigned event occurring at a particular time. This condition would be met had the emphysema resulted from inhaling the smoke and fumes on a single occasion, * * * ."

Conversely, see *Schabel v. Riddell-Robineau Mfg. Company,* 245 Ky. 409. There an employe inhaled dust while disconnecting pipes blowing dust into a furnace and this caused gangrene and pneumonia resulting in death a month later. This was held to be an accident and a compensable injury.

Driver Recovers $15,000

Frequently, a jury will award a large amount of damages on conflicting testimony. However, the higher court will not reverse the jury's verdict unless the evidence indicates conclusively that the award is improper.

For example, in *Pestotnik v. Balliet,* the measure of damages in a suit for tort, a gravel truck and a passenger car collided at a street intersection. The driver of the gravel truck sued for damages and testified that the driver of the passenger car was negligent in that he failed to yield the right of way to the truck at the intersection and that he was driving his automobile at a high and excessive rate of speed without bringing it to a stop before entering the arterial highway.

The driver of the passenger car denied generally that in operating his automo-

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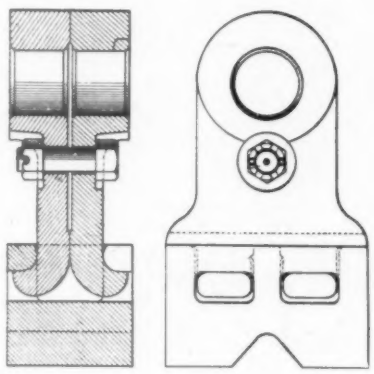
The design of the Amsco "Clark" renewable tip pulverizer hammer makes it impossible for the tip to come off as long as the shank hangs from its supporting rotor pin. Our drawing shows how the head or tip is secured to the shank by the two hooks which terminate each shank half.



Showing construction features of Amsco "Clark" reversible and renewable tip pulverizer hammer. (Patent applied for)

metal in the head is actually used before replacement is necessary. A pair of shanks outlasts many tips.

The tip is easily replaced by removing the assembly bolt and spreading the shank halves apart, unhooking the tip. A new tip is installed by reversing this operation. The assembly bolt is locked with a standard split cotter pin.

The proper time for reversing hammer tips or for replacing worn out tips is plainly indicated because the holes in the tip sides show when the shank hooks are about to be attacked.

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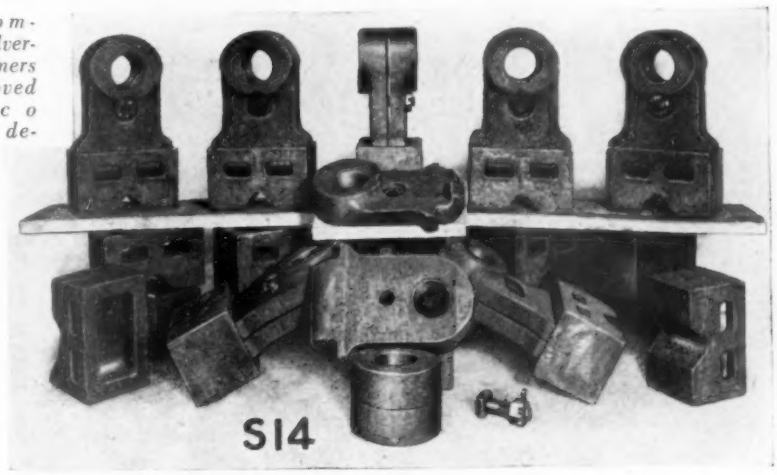

There are other unusual features in this three-part hammer:

Because the head is reversible end for end, about 75% of the

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bile he was negligent.

The cause was submitted to the jury and later that body returned a verdict in favor of the truck driver for the sum of $15,000. The higher court upheld the jury's verdict, and said:

"One thing is certain—the gravel truck and the coupe collided somewhere in the intersection. . ."

● Freight Liability

Modern higher courts have established that a consignor of goods is responsible for all transportation charges, in the absence of some *valid* agreement to the contrary with the carrier. On the other hand, common carriers are required by law to collect the full amount of freight charges fixed by the Railroad Commission. Therefore, a contract is void if by it a common carrier agrees to transport nonmetallic products at less than the legal freight rate. The carrier always may sue and recover the legal freight rate, irrespective of contracts made to the contrary.

However, unusual circumstances may modify this usual law and automatically relieve the shipper from obligations to pay the legal freight charges. So held a higher court in *Texas Gravel Company v. East,* 175 S. W. (2d) 435, reported December, 1943.

The facts of this case are that the tariff specified $1.10 per ton freight rate for sand and gravel from the shipper's location. Due to litigation with another carrier the accepting carrier issued incorrect bills of lading listing the shipping point several miles *closer* to the consignee's point of delivery and charged the shipper only 95 cents per ton. Thus the gravel company was supposed to save 15 cents per ton.

The bills of lading in each instance were of uniform design and contained a provision: "The consignor shall be liable for the freight and other lawful charges, *except* if the consignor stipulates that the carrier shall not make delivery without requiring payment of such charges and the carrier, *contrary to such stipulation,* shall make delivery without requiring such payment, the consignor shall not be liable for such charges.

After a lapse of seven years the Railroad Commission demanded the consignee to pay the unpaid freight of 15 cents per ton. This suit involved several thousand dollars.

The consignee was insolvent and could not pay the accumulated freight rate and the carrier sued the consignor. The higher court held the consignor not liable, and said:

"Appelant [carrier] had no legal right to change the terms of shipment, substitute bills of lading in transit showing shorter hauls and less freight charges than designated in the bills of lading theretofore issued. . . The means employed were, we think, tantamount to a release of the shipper as an obligor for payment of freight."

Therefore, under these circumstances, the shipper was relieved from his usual obligations to pay freight charges not paid by the consignee.

When Carrier Does Not Accept Goods.

—Modern higher courts consistently hold that a common carrier is not liable for the loss of shipped products unless the shipper establishes that the products were unconditionally delivered to the carrier for *immediate* transportation, and that the shipment was accepted by the carrier for that purpose.

For example, in *Shiman v. Nebraska Company,* 9 N. W. (2d) 807, reported December, 1943, it was disclosed that merchandise was deposited by a truckman on a carrier's loading platform. The truckman was *not* an agent of the carrier. Before the carrier's agent accepted the goods they were stolen.

The higher court held that since the carrier had not legally accepted the goods for transportation, it was not liable for the value of the stolen goods.

If, however, the truck driver had been the legal agent of the carrier the latter would have been liable for the loss. This is so because a common carrier, which legally accepts goods for transportation, is liable as an insurer for all loss and damage to the shipment except when caused by the inherent or concealed defects of the goods; actual negligence of the shipper, acts of God, as unusual storms, lightning and the like; and a public enemy, as the Japanese or Germans, during the war.

A common carrier can not reduce this ordinary liability *except* modern higher courts hold that a carrier may make a valid contract with a shipper who is willing to pay less than the normal freight rate in consideration of declaring a less valuation of shipped products. Obviously, if the shipper prefers to pay the normal freight rate and receive normal protection he has this privilege. Another important point of law, relating to common carrier's liability, is that under no circumstances is a contract valid if by its terms a shipper agrees to relieve a common carrier from liability for goods lost

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by ORO SUPERMANG

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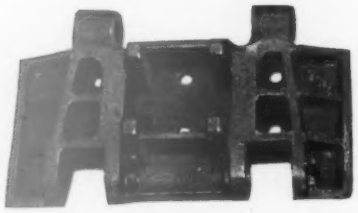

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or destroyed through negligence of the carrier's employees.

When Initial Carrier Is Liable.—Unless a shipper proves that the initial carrier caused damage to merchandise, the court will not grant a judgment against such initial carrier.

For instance, in *Yeckes—Eichenbaum, Inc. v. McCarthy,* New York, 49 N. E. (2d) 517, it was shown that an initial common carrier accepted products for transportation. When the goods were delivered to the consignee by the last carrier they were in damaged condition. The question was: Is the initial carrier liable?

There was no evidence to prove where the damage occurred, but the shipper alleged and proved that the goods were delivered in good condition to the initial carrier. Therefore, the higher court refused to hold the initial carrier liable, and said:

"The presumption is that they continued to be in the same good condition when they left the possession and control of that initial carrier."

Therefore, according to this decision a shipper is expected by the law to prove which of several carriers effected the damage to shipped products.

Questions and Answers

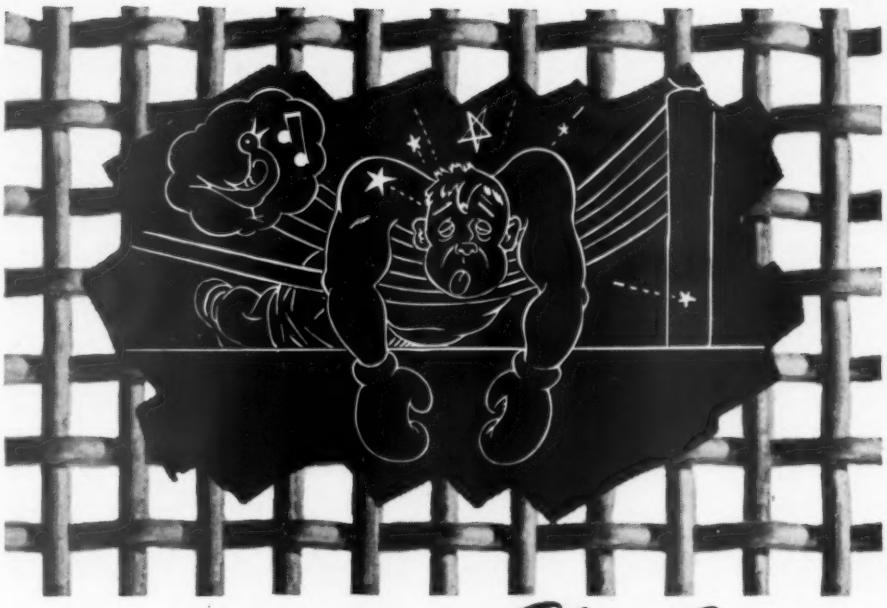
[Mr. Parker will be glad to answer questions regarding legal problems of PIT AND QUARRY readers. Questions should be addressed to Leo T. Parker, Legal Editor, PIT AND QUARRY.—Ed.]

Legal Editor: Some few weeks ago one of our salesmen made a contract with one of our dealers and, without our authority, contracted to give the dealer exclusive sales rights in a certain locality. Now, this dealer expects us to fulfill the contract, although the salesman no longer represents us. Are we obligated and can we hold the salesman liable in damages for making the contract without authority?—A. W. C.

Answer: An employee may be personally responsible on a contract (1) if he knowingly makes a false written or oral statement or representation of his authority with intent to deceive a person who intends to transact business with the employer; or (2) if he performs any unlawful act with or without authority of the employer; or (3) if he performs a damaging or injurious act although believing that he had authority, but actually has none; or (4) if he wilfully performs an act which results in damage to any one; or (5) if he does damaging acts outside his scope of authority, although while so doing he intends to render the employer a valuable service; or (6) if he intentionally assumes an obligation for the employer; or (7) if he unintentionally but legally assumes an obligation while performing services for his employer.

A review of past higher court cases disclosed an important rule by which it may be determined when a representative or employee may make a valid contract. He may do so only under the following circumstances:

(1) An agent can only make a valid contract for an employer when the contract is within the limit of the agent's authority. (2) Although persons dealing with an agent must inquire ordinarily as to the extent of the authority, this is



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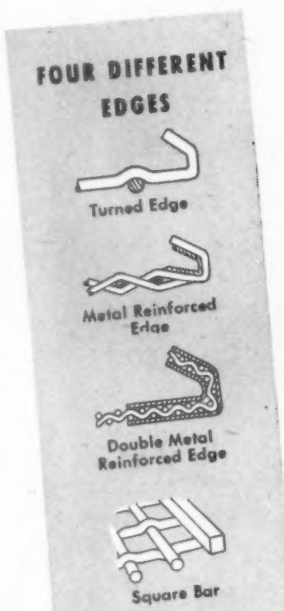

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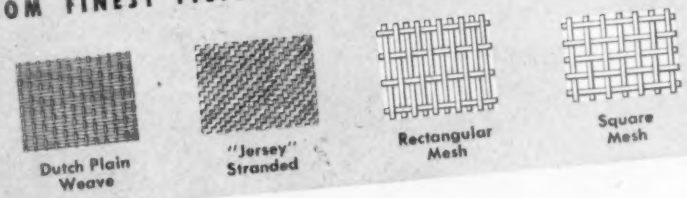

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not true when the employer sends the agent to perform an act with apparent broad authority. (3) When the authority to perform an act is given by an employer to an agent or representative the agent may do the work or service as he may deem best. (4) If the agent is a special representative and his authority is limited, and the employer has not in some manner notified the public of the agent's broad or unusual authority, then under no circumstances may the agent make a valid contract without first submitting the contract to his employer for approval. (5) Any agent, no matter how limited his authority may be, can have his authority greatly increased if the employer notifies the person with whom the agent intends doing business, of this increase of authority.

Therefore, it is my opinion that you are not liable on the contract, and that the salesman is personally liable.

Legal Editor: Recently we purchased used machinery under an "as is" clause in the sale contract. Does a clause of this kind in the contract render the seller liable in the event we are not satisfied, or the machine is defective?—G. & G.

Answer: Under ordinary circumstances, as when the salesman makes no statement regarding the quality of the machine, the purchaser is bound by the terms of an "as is" clause in a sale contract. However, if the salesman verbally states that the machine is in good condition, knowing that the machine is defective this is fraud for which the salesman's employer is liable.

For example, in the case of *Ferguson v. Koch,* 268 Pac. 343, a buyer and seller signed a contract of sale which specified that the machine was sold *"as is."*

Previous to the purchaser affixing his signature to the contract the salesman verbally guaranteed the machine. When the buyer discovered that the salesman's statement was false, he immediately sued to recover the purchase price. The seller attempted to avoid liability on the grounds that the buyer had ample opportunity to examine the machine and that testimony relating to the verbal statements was not admissible particularly because the written contract contained an "as is" stipulation. However, the court held that the seller was bound to take the machine back and refund the purchaser's money. This court said:

"The general rule is well established that, where parties deal fairly or at arm's length, the rule of *caveat emptor* applies, but, where honest dealing is departed from by the vendor making false statements as of his own knowledge, *the falsity of which is not known* to the purchaser, such purchaser has the undoubted right to rely implicitly upon such statements, and the principle has no application. In other words, the vendor (seller) must stand mute, or at least refrain from making statements calculated to deceive. A purchaser has a right to relv on the representations of his vendor as to facts not within his knowledge, and the seller can not escape responsibility by showing that the purchaser might have ascertained upon inquiry that the representations were untrue."

In order that you may clearly understand the law involved in this case it is well to explain that the seller would *not* have been liable if the evidence had proved: (1) That the seller had made the false statement after the contract was signed; (2) that the seller actually did not know that the quality of the machine was not the same as stated in the written contract, but the seller merely expressed an opinion that he *believed* its quality to be as verbally represented; (3) or that the purchaser did not rely upon or believe the verbal statements made by the seller.

In other words, neither a seller nor his salesman may without liability make known false statements regarding the quality of merchandise, irrespective of the contents of a written contract. On the other hand, either a seller, or his salesman, may depend upon the purchaser using his own good judgment to inspect a used machine and determine for himself when the quality of it meets with his requirements, if it is sold under an "as is" clause.

Legal Editor: How can I obtain copyrights for our company on advertising literature, catalogues, etc.? Can I do this job without employing a lawyer? Also, are the laws relating to copyrights the same as patent and trade-mark laws?—A. F. C.

Answer: Yes, you may obtain a copyright yourself, although many persons employ experienced patent attorneys to file and receive their copyrights. Obtaining a copyright does not present complications such as arise when prosecuting an application for a patent, trade-mark, or label registration. A simple and practical plan is to write to the Register of Copyrights, Library of Congress, Wash-

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ington, D. C., and explain in simple words what you desire to copyright, whether a booklet, descriptive or advertising circular, catalogue, book, or drawing. It is not necessary for you to explain or describe in detail the thing to be copyrighted in this first letter. Soon a pamphlet and a blank form will be mailed to you from the copyright office. Follow simple directions given in the pamphlet, and fill in the form and mail with the usual $2 fee. Without any prosecution or written or verbal argument the copyright should be promptly mailed to you. This is so because the Register of Copyrights does not examine records to determine or not you are entitled to a copyright. However, before a patent is allowed or a trade-mark is registered the Patent Office officials carefully examine all records and usually a very complicated legal procedure must be followed and amendments filed before an application is granted. As above explained this is not so with respect to copyrights.

However, you must follow the law regarding notifications, or you automatically forfeit your copyright. For example, a trade-mark or trade-name belongs to the first user irrespective of whether he filed an application for registration. Moreover, his ownership is for a period limited only for the period he continues to use the trade-mark or trade-name. Moreover, the owner need not publish any notification regarding his right to use it. In other words, proof of usage of a trade-mark or trade-name is all that the higher courts require to establish exclusive ownership thereof in the locality in which the merchandise on which the mark is used.

However, with respect to patents the law is different. An inventor is required to file an application for a patent within a reasonable time after he has perfected his invention. A patent issues for 17 years, and can not be renewed.

With respect to copyrights the law differs materially from laws pertaining to both patents and trade-marks. A trade-mark differs from a copyright in that a trade-mark can not be registered until *after* it has been used by its originator, but a copyright must be published or used *first with the copyright notice thereon before* it can be registered. Publication of the work or book without this notification *invalidates* the copyright. Moreover, the owner of a valid copyright need not be the original inventor, as he may independently and without copying produce exactly the same work or formulation of words and obtain a valid copyright. This is not so with respect to patents and trade-marks.

If the thing copyrighted is a book, catalogue, pamphlet, or the like, you must imprint on page 1 the notification: "Copyright 1944, by (name of author here)". This notification must be printed in a *single* line, otherwise the copyright notification is void and the copyright is automatically forfeited.

After the work has been produced or printed *then* the copyright application may be filed, but not before.

The Davy Compressor Company was recently awarded the Army-Navy "E" pennant with two stars, in recognition of continued outstanding war materials production. Just a year ago, Davey workers were presented with the original "E" pennant, and last June they received the first renewal star, awarded for maintaining their high rate of quality war production.

The President of a leading Iowa gravel company writes: "Some twenty years ago we purchased our first Eagle Washer and have used them continuously since that time. At present we have a battery of four Eagle Washers in operation. *In cost of operation and efficiency in removing objectionable material from the gravel, they have proved very satisfactory.* In our present operation we process four different sizes of gravel and all of them will meet the most exacting specifications, thus testifying again to the efficiency of the Eagle Washer."

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"SERVING INDUSTRY FOR OVER SEVENTY YEARS"

TRAFFIC News Digest

Central Freight Association

Docket 76889 (1)—Industrial sand subject to Col. A.B.C. rating and minimum weight as described in C.F.A. Trf. 575-A. Establish on, from Grand Haven, Muskegon and Rosy Mound, Michigan. Proposed rates (In cents per net ton)

	A	B	C
To Ernest, Pa., Pursglove, W. Va.....	352	387	352
McIntyre, Pa.	363	399	363

Rates are subject to Ex Parte 148 increase (suspended).

Docket 76890 (1)—Industrial sand subject to Col. A. and C. ratings and minimum weights as described in C. F. A. L. Trf. 575-A. Establish on, from Black's Siding, Mich., Col. A. and C. to Ernest and McIntyre, Pa., 319 cents; to Pursglove, W. Va., 341 cents per net ton. Routing: Routing submitted herewith for account of the D. C. & S. Ry. are as follows: To Ernest, Pa., D. C. & S. Ry.; Wilmot, Mich., G. T.—C. N.—G. T. Rys.; Buffalo, N. Y., B. & O. R.R. To McIntyre, Pa.—Via D. C. & S. Ry., Wilmot, Mich.—G. T.—C. N.—G. T. Rys., Buffalo, N. Y., B. & O. R.R. To Pursglove, W. Va.—Via D. C. & S. Ry., Wilmot, Mich., G. T. W. R.R., Detroit, Mich., D. & T. S. L. R.R., Toledo, O., N. Y. C. (W), Youngstown, O., P. & L. E. Ry. Brownsville Jct., Pa., Monongahela Ry. Subject to any additional routing that may be submitted.

Docket 76892 (1)—Crushed Stone, in bulk, in open top cars. Cancel rates on, from Hillsboro and New Vienna, O., to Pittsburgh, Pa., published in Item 570-A, Sup. 8 to B. & O. R.R. Trf. H-3486-E, and similar items in agency and other individual lines' tariffs, account obsolete, classification basis to apply.

Docket 76894 (2)—Crushed commercial slag (product of iron or steel blast or open hearth furnaces) (not including granulated slag), in open top cars, C. L., minimum weight 80 per cent. of marked capacity of car. Establish on, from Cleveland, Ohio, to Cincinnati and Cheviot, Ohio, 182 cents per net ton.

Docket 76899 (1)—Cement, viz.: Common, hydraulic, masonry, mortar, natural or portland, etc., as described in Item 5 of P.R.R. Trf. I.C.C. 2669, C. L., minimum weight 50,000 pounds, marked capacity of car to govern if less. Establish on, from Walford, Pa., to Erie R.R. stations, Mahoning, Garrettsville-Hiram, Jeddoe, Mantua, Aurora and Genuga Lake, Ohio, 9½ cents, via P.R.R. Warren, Ohio, Erie, subject to Ex Parte 148 increase (suspended).

Sup. 1 to WDA 76678—Crushed Stone, in bulk, WDA 76678, DB 3255 dated October 13, 1944, covering proposal to cancel present rates on, from Ashtabula, O., to Chardon, Conneaut, Madison, Painesville and Perry, O., account obsolete, is hereby withdrawn from the docket on request of proponent.

Docket 76902 (2)—Sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding, ground, loam, moulding, mouling-Bonded (naturally or otherwise), polishing, pulverized or silica), or gravel, in open top cars, C. L. Establish on, from Clyde, W. Va., to pts. in W. Va. rates as shown in Exhibit C below:

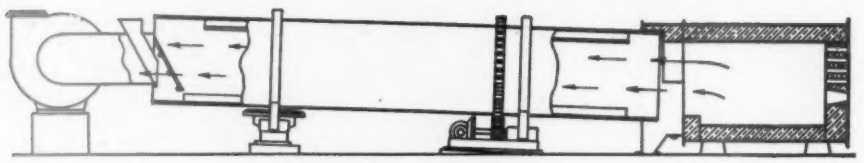
Exhibit C

Sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding, ground, loam, moulding, moulding-bonded (naturally or otherwise), polishing (pulverized or silica), gravel, in open top cars, carloads. Rates in cents per net ton, from Clyde, W. Va., to representative West Virginia points:

Representative	*Proposed*
Agnew, Claremont, Gordon, Prenter, Sovereign and Wharton...	121
Brounland, Cabin Creek Jct., Leewood, Mt. Carbon, Sharon....	99
Bryce, Cameo, Deepwater, Keeneys Creek, Republic No. 2, Seth and Whitesville	110
Quinnimont, Terry	132
Plymouth	77
St. Albans	88

Docket 76907 (1)—Sand (except blast, core, engine, filter, fire or furnace or furnace foundry, glass, grinding or polishing loam, moulding or silica) or gravel, in open top cars, C. L. Establish on, from Wolcottville, Ind., to Centerville, Michigan 96 cents; to Colon, Mich., 101 cents per net ton, via P.R.R., Sturgis, N.Y.C.(W), Three Rivers, N.Y.C.(M).

Docket 76919 (Cancels WDA 76767) (1)—Lime, common, hydrated, etc. Establish an exception to Rule 10 of the Official Classification in CFA L Trf. 130-C, as follows: Mixed carloads of



"RUGGLES-COLES" Class "XF" Dryer

A direct heat, single shell rotary dryer. Either parallel or counter flow types.

For severe service the shell is lined with removable plates.

HARDINGE EQUIPMENT

	Bulletin No.
Agitators	31-C
Clarifiers	31-C
Classifiers, Air	17-B
Classifiers, Counter-Current	39-A
Classifiers, Hydro	31-C
Conveyors, Rotary	44
Density Stabilizer	42
Digesters	35-B
Dryers	16-C
"Electric Ear"	42
Feeders, Belt	33-C
Feeders, Constant Weight	33-C
Feeders, Disc	33-C
Feeders, Drum	33-C
Feeders, Non-Flooding	33-C
Feeders, Weight Recording	43
Filters, Sand	30-A
Metal Reclamation	8-A
Mills, Batch	19-A
Mills, Conical Ball	13-D
Mills, Conical Pebble	13-D
Mills, Rod	25-B
Mills, Tube	18-A
Mixers, Slurry	31-C
Pumps, Diaphragm	32
"Ruggles-Coles" Dryers	16-C
Kilns and Coolers	16-C
Scrubbers, Conical	37
"Thermomill"	17-B
Thickeners	31-C

This type dryer is used for drying materials that can be heated above 212° F. in direct contact with combustion gases such as limestone, sand, shale and other materials of this type.

Write for Bulletin 16-C describing this dryer and eight other types.

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NEW YORK CHICAGO SAN FRANCISCO TORONTO

lime, common, hydrated, quick or slaked and plaster, calcined, the calcined plaster not to exceed 25 per cent. of the aggregate weight of the mixed carload on which the freight charges are assessed, will be charged at actual weight and at the straight carload rate applicable to each of the respective commodities, subject to the highest carload minimum weight attaching to any of the rates applied, the deficit in minimum weight, if any, to be charged for at the highest rate applicable to any article in the mixed carload.

NOTE—Where alternative rates and minimum weights apply on any commodity in the mixture the charges for the wegiht of such commodity in the mixed carload shall be obtained by use of the rate applicable thereon at the lowest minimum except that the charge for such commodity shall not exceed that which would be assessed if taken as a straight carload.

Docket 76944—Limestone, crude, not screened to specified size, not suitable for road or building construction work, in open top cars, C. L. minimum weight 90 per cent. of marked capacity of the car, except when car is loaded to full cubical or visible capacity, actual weight will apply. Establish on, to Bessemer, Duquesne, Hays, Munhall, Rankin, South Duquesne, Universal, Pa., from Annandale, Hillsville, Pa., 80 cents; Kaylor, Pa., 83 cents; Shaw Jct., Walford, Worthington, Pa., 80 cents per G.T. subject to Ex Parte 148 increase (suspended), and subject to expiration date of 6 months after effective date. Routes: Annandale to Universal via B&LE RR direct. Kaylor to Universal via WA RR-Queen Jct.-B&LE RR. Worthington to Universal via B&O RR-Butler-B&LE RR. Hillsville, Shaw Jct. and Walford to Bessemer, Rankin and Hays via P&LE RR DIRECT. Hillsville to Bessemer, Munhall, Hays, Duquesne and South Duquesne via PRR direct. Worthington to Bessemer and Rankin via B&O RR direct.

Docket 76946 (1)—Slag, crushed or crushed commercial (not granulated), a product of iron and steel blast or open hearth furnaces, in bulk, in closed cars, C. L. Establish on, from Hamilton, O., to Connellsville, Pa. 275 cents; Lancaster, O., 165 cents; Winchester, Ind., 132 cents per net ton.

Docket 76948 (2)—Slag (a refuse product of lead or zinc furnaces having no commercial value for the further extraction of metal othe nnhtroraiETAO traction of metal other than iron) in open top cars, C. L. Establish on, from Josephtown, Pa., to Youngstown, O., 125 cents per net ton via P&LE RR direct.

Docket 77004 (1)—Slag, crushed, C. L., minimum weight 90 per cent. of marked capacity of car, except when car is loaded to full cubical or visible capacity, actual weight will apply. Establish on, from Weirton, W. Va., to Short Creek, W. Va., 44 cents per net ton, subject to Ex Parte 148 increase (suspended).

Docket 77009 (2)—Sand, as described in Exhibit G attached. Establish on, from Bellaire, O., to Aliquippa, Pa. (A) 132 cents; (B) 143 cents per net ton, subject to Ex Parte 148 increase (suspended), via established routes. Under authority of ICC F.S.O. 12620 of Dec. 7, 1936, as amended, and F.S.O. 13050 of March 8, 1938, rates will not apply from or to intermediate points.

Docket IRC 511-207—Sand, Moulded, Bonded, also Sand (except Sand, moulding, bonded) etc., Gary, Ind., to Zeigler, Ill. Present—$2.85 net ton. Proposed $2.53 net ton.

Exhibit G

(a) Sand (except sand, moulding, bonded (naturally or otherwise), and except ground or pulverized sand), and gravel, in open-top equipment, rates will not apply on shipments in cars with tarpaulin or other protective covering. In such instances the rates applicable on shipments in closed cars are to be assessed.

(b) Sand, moulding, bonded (naturally or otherwise), in all kinds of equipment.

Sand (except sand, moulding, bonded (naturally or otherwise), and except ground or pulverized sand), in closed equipment.

Docket 77010 (1)—Crushed Stone, in bulk, in open top cars, C. L. Establish on, from North Vernon, Ind., to Beman, Ill., 121 cents per net ton.

Illinois Freight Association Docket

Docket IRC 511-208—Stone, ground or pulverized, crushed or rough quarried; also strippings of stone quarries, in straight or mixed C. L., minimum weight 90 per cent. of marked capacity of car except that when cars are loaded to full cubical or visible capacity, actual weight will apply, but not less than 40,000 lbs., to points on N.Y.C. & St. L. R.R. (Peoria Divisions):

	From Valmeyer, Ill.	
To (Representative)	Pres.	Prop.
Peoria, Ill.; Bloomington, Ill.	237	177
Elliott, Ill.; Cheneyville, Ill.	237	200

	From Prairie du Rocher, Ill.	
	Pres.	Prop.
Peoria, Ill.; Bloomington, Ill.	237	182
Elliott, Ill.; Cheneyville, Ill.	237	200

Meeting Dec. 12, 1944, 10 a.m.

Docket ORMV 221-3—Lime, common, hydrated, quick or slacked, straight or mixed C. L., minimum weight 50,000 lbs., Ste. Genevieve and Mosher, Mo., to New Orleans, La. Present—$4.20 per net ton. Proposed—$3.84 per net ton.

Docket IRC-1204-2 — Charges, rules and regulations governing privileges to stop and unload shipments of agricultural limestone; To amend Alton RR Tariff 46-B and similar tariffs of other lines, which provide for charges, rules and regulations governing privileges to stop and unload shipments of agricultural limestone at points in I.R.C. territory.

Docket and Status Report of Prior Southern Freight Association Submittals

Docket 32274 (shipper: suggested by carrier)—Publish rates on lime, C. L., Clinchfield, Ga., to certain destinations in N. C., made on basis of Southern Lime scale for short line workable distances. Statement of proposed rates will be furnished upon request.

Docket 32323 (shipper: suggested by carrier)—Publish rate of $3.84 per net ton on lime, C. L. 50,000 lbs. Ste. Genevieve and Mosher, Mo., to New Orleans, La.

Docket 32376 (carrier)—(a) Amend Agent Hoke's Sand, Gravel and Stone Trf. 388-F, I.C.C. 840, containing single and joint line mileage scales of rates to and from C. N. O. & T. P. Ry. stations by authorizing Standard Line Scale (same as for C. N.O. & T.P. and other short line connections such as O. & W., K. & T., E.R., etc.), for account of Brimstone R.R. (b) Amend Agent Hoke's Trf. 201-B, I.C.C. 651 (Frt Distance Table) by providing for distances as follows for account Brimstone R.R.

Computed via Brimstone R.R.	*Miles*
New River, Tenn.	0.
Highway Junction, Tenn.	.7
Highway, Tenn.	1.4
Round Mountain, Tenn.	3.1
Pemberton, Tenn.	3.6
Hunter, Tenn.	6.5
Slick Rock, Tenn.	8.6
Brimstone, Tenn.	10.8
Frazier, Tenn.	11.3
Mill Creek, Tenn.	11.5
Little Creek, Tenn.	12.4

Southwestern Freight Bureau Docket

Docket 35179 (1)—Crushed Stone, Salida, Col., to points in the Southwest and W.T.L. Territory. To establish rates on crushed stone from Salida, Col., to various destinations in W.T.L. and S.W.F.B. territories based on the joint line distance scale published in Item 1530 of SWL Tariff 162-S for the through distance from Salida, Col., to destination plus a differential of 30 cents per ton for the D. & R.G.W. distance of 95.8 miles from Salida, Col., to Pueblo, Col.

Trunk Line Association Docket

Docket 42572 (increase—carriers)—To cancel rates on crushed stone, coated and uncoated, as published in Erie RR Tariff GO 2466-L, ICC No. 20328, from Upper Montclair, N. J. to various stations on the Erie RR and connections, permitting rates as published from 210 Great Notch, N. J. to apply under Rule 27 or

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Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants. Engineering Service.

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The compact, ingeniously designed GILSON TESTING SCREEN assures a controlled product guaranteed to meet specifications. Test samples of crushed stone, gravel, slag, etc. are carefully sized through five test screens by a smooth and quiet vibration, separating 100 pounds of sample in 5 minutes or less. Eliminate errors that happen through "sizing by guess"—write today for complete information on the GILSON TESTING SCREEN.

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class rates as published in Agent Curlett's Tariff ICC No. A-445. Reason: Account no present or prospective movement.

Docket 42573 (increase—carriers)—To cancel all commodity rates on plaster and plasterboard as described in Erie RR Ttariff GO 3123-C, ICC No. 19744, from Harrison and Newark, N. J. (Group 2) to all points in Trunk Line and New England territories, permitting class rates to apply. Reason: Account no present or prospective movement.

Supplement 1 to 42543 (shipper)—To amend rate proposal No. 42543, covering rates on cement, C. L., from Hudson, N. Y., to Cazenovia, N. Y., by adding Alsen, N. Y., as a point of origin at rate of 15 cents per 100 lbs.

Docket M-4742 (shippers and carriers)—Cement, common, hydraulic, masonry, mortar, natural or Portland, in straight or mixed carloads:

To	(1)	(2)	(3)
Northampton, Pa., Navarro, Pa.	8½	9½	8½
Weaversville, Pa.	8½	9½	8
Lerch's Pa., Jacksonville, Pa., Bath, Pa.	8	8½	8
Bath Junction, Pa.	8	8½	7

Reason: Comparable with rates applying from and to other points.

(1) From Martins Creek, Pa., via L&N R.R. rates in cents per 100 lbs.

(2) From Martins Creek, Pa., via D. L. & W. R. R. rates in cents per 100 lbs.

(3) From Sandt's Eddy, Pa., via L.& N. R.R. rates in cents per 100 lbs.

Docket 42585 (shippers)—Limestone, Ground or Pulverized, in straight or mixed carloads, minimum weight, 60,000 pounds from Accord, N. Y. to Pond Eddy, Shohola, Pa., $1.38; Lackawaxen, Pa., $1.43; Narrowsburg, N. Y., $1.49; Skinners Falls, N. Y., $1.60; Hankins, N. Y., and Long Eddy, N. Y., $1.65; Lordville, N. Y., and Hancock, N. Y., $1.71, and Hale's Eddy and Deposit, N. Y., $1.82, in lieu of present class rates. Reason: Comparable with rates applying from and to other points.

Docket 42586 (shippers)—Limestone, Ground or Pulverized, in straight or mixed carloads, minimum weight 60,000 pounds from Accord, N. Y. to Unadilla, Wells Bridge, Otego and Oneonta, N. Y., $1.82 per ton in lieu of present class rates. Reason: Comparable with rates applying from and to other points.

Docket 42587 (shippers)—Limestone, Ground or Pulverized, in straight or mixed carloads, minimum weight 60,000 pounds, from Accord, N. Y. to various stations on the N.Y.O. & W. Ry. as per exhibit, copy of which will be furnished on request; rates based on I.C.C. Docket 25220, carriers revised scale. Reason: Comparable with rates applying from and to other points.

Docket M-4745 (increases and reductions) (carriers)—To revise all rates on Crushed Stone, coated with oil, tar or asphaltum, C. L. from Akron, Bowmansville, Buffalo (ex-Cheektowaga), N. Y., LeRoy, North LeRoy and Stafford, N. Y. to destinations in the Western part of the states of New York and Pennsylvania, as indicated below:

To Territory 1 (except from Cheektowaga, N. Y.), on basis of Shaw Junction, Pa., single or joint line scale, which result in the lowest rates, prescribed by the Commission in I.C.C. Docket No. 22598;

To Territory 2 (except from Cheektowaga, N. Y.), on basis of Tyrone Forge, Pa., single or joint line scale, extended, which result in the lowest rates, prescribed by the Commission in I.C.C. 25028;

From Buffalo (ex-Cheektowaga), N. Y., distances to be figured 8 miles over Buffalo, N. Y. plus the shortest distance embracing the lines of not more than three line haul carriers from Buffalo, N. Y., to the destinations involved: Reason: To comply with suggestions of the Interstate Commerce Commission in connection with Fourth Section Application No. 20743.

Docket 42602 (shipper)—Stone, viz.: Crushed and Screenings (will not include agricultural limestone or ground limestone, unburnt; fluxing stone or firestone; or stone coated with oil, tar or asphaltum), in straight or mixed carloads, minimum weight 90 per cent. of marked capacity of car, etc. from Monocacy, Pa., to Louisville, Ky. $6.16 per net ton, in lieu of present 6th class rate. Reason: To restore rate formerly in effect.

Western Trunk Line New Applications

Docket E-43-181 — Proposed cancel present rates on stone, C. L., published in Southern Ry. Tariff No. 6 from North and South Carolina origins to Crookston, Delano, Hutchinson, Litchfield, Melrose and Rockville, Minn., also Fargo and Wahpeton, N. D., account obsolete, from stations in North and South Carolina to stations in Minnesota and N. D.

Docket E-41-662—Crushed Stone, including ground or pulverized limestone, in bulk, bags or barrels, minimum weight 90 per cent. of marked capacity of car, from Salida, Colorado to representative points (rates in cents per ton of 2,000 pounds): To Omaha, Neb., 382; Kansas City, Mo., 382; Wichita, Kan., 316; Tulsa, Okla., 371; Dallas, Texas, 415; being proposed rates.

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Long Range Machines

Slackline Cableways for Deep Digging

WHEN you have a problem of digging any kind of material, from a deep pit, river or pond, and delivering to a hopper, storage pile or other elevated point—there's nothing quite equal to a Sauerman Slackline Cableway. This machine is a digger, conveyor and elevator all in one. It utilizes a round bottom excavator bucket that has the same powerful digging action as the buckets used on revolving dragline excavators. The bucket is chain-suspended from a carrier running on an inclined track cable and is equipped with a simple dumping device which permits automatic dumping at any pre-determined point along the track cable.

Above picture shows a Sauerman Cableway mining a deposit 90 ft. deep and 1,000 ft. wide and moving the gravel to a hopper on top of screening plant at rate of 900 cu. yd. a day. Operating cost is only a few cents a yard.

After dumping its load, the empty bucket is carried by gravity back to the digging point. The track cable swings around a central mast or tower in a wide arc, the radius of which may be as much as 1200 ft., and the bucket digs and delivers wherever the operator wishes within the radius. Bucket sizes range from 1/3 to 3½ cu. yd. Any type of power can be used.

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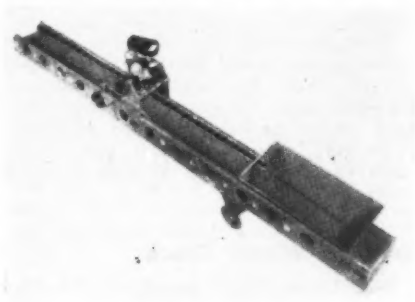
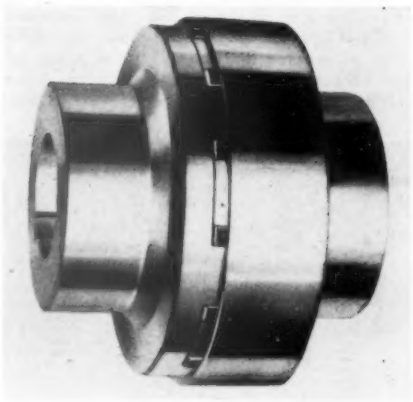


Portable belt conveyor.

gasoline engine, which is ideal for most conveying, or a 2.3 horsepower engine for heavy-duty work. The conveyor may be had without power unit, where user has his own motor. All models may be had with a standard engine mounting or a high engine mounting for conveying bulky material. Engine mounting on models equipped with gasoline engine is adjustable to keep engine level regardless of angle of conveyor. Normal belt speed is 420 F.P.M. Variable speed drive pulley is available if desired.

● Shrouded Coupling

An important feature claimed for the new L-R Type C shrouded flexible coupling recently announced by Lovejoy Flexible Coupling Company, Chicago, is greater safety to personnel. It consists of an outside collar which holds the load cushions in

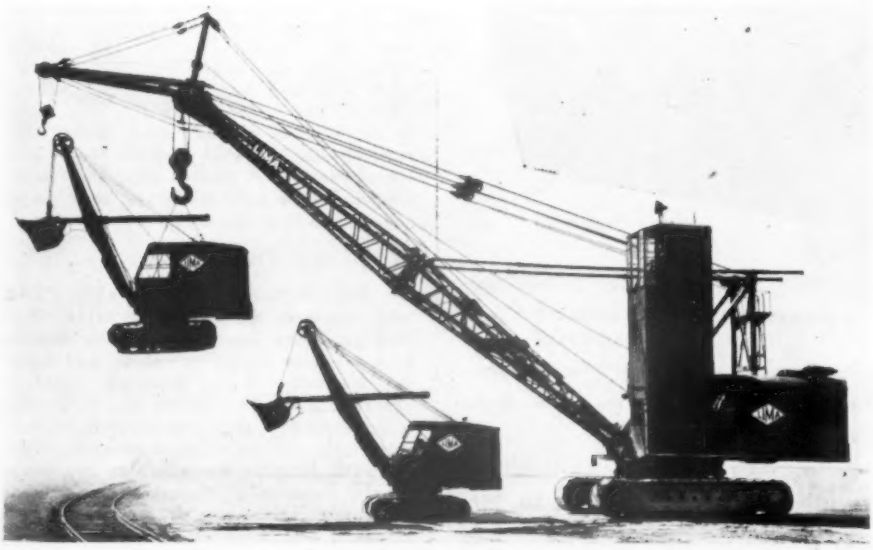


Safety coupling.

place. An extension of this collar which encircles the coupling, safeguards material and fingers from the heads of the bolts which secure the load cushion retainer. The bolt heads are concealed, yet easily and conveniently reached when necessary. The design is more compact, with a smoother external surface. These couplings are built for heavy duty service from 4.6 to 806 hp. at 100 r.p.m. Types are available for direct attachment to the flywheel, as well as drum types, and others for rapid disassembly without disturbing drive or driven equipment, etc. These couplings employ cushions of various materials adapted to the particular service for which the coupling is used. The cushions are always in sight. In operation half of the cushions are idlers (except on reversing load), so that a new set of cushions is always ready.

● All-Purpose Crane

A new crane, shovel and dragline, Type 2000, has been announced by the Lima Locomotive Works, Lima, Ohio. As a crane it has a lifting capacity of 100 tons; when equipped as a shovel or dragline it has a capacity of 5 cubic yards. It differs from other Lima machines inasmuch as the drums are in tandem. Equipped with air-control which greatly simulates the smooth, quick and positive movement of steam power. Ease of all movements results in greater output, with less effort on the part of the operator. The long wide crawlers effect low bearing pressure and maximum stability when working in, or traveling over wet and uneven ground. The unit can be converted in the field from one combination to another without major dismantling.

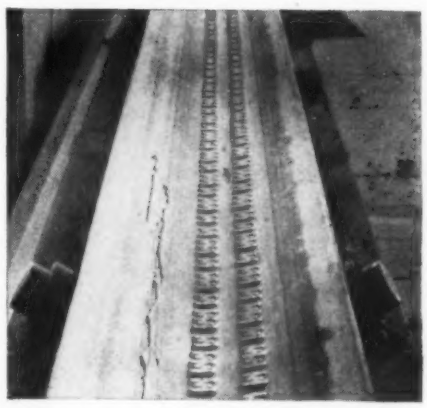


CONVEYOR BELTS

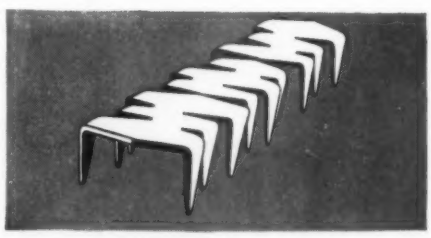
fastened or repaired

ON THE JOB

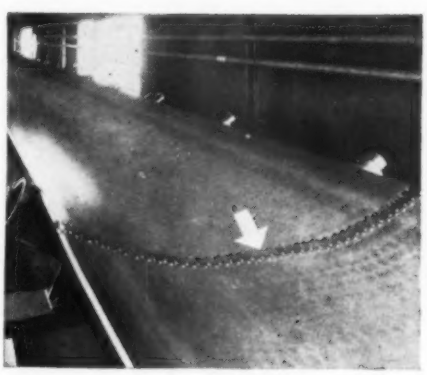
in a few minutes



All you need are hammer, block of wood and . . . .



BRISTOL'S BELT LACING



For rubber or woven conveyor belts up to 13/16" thick.

Write for Bulletin 736.

THE BRISTOL COMPANY

Mill Supply Division

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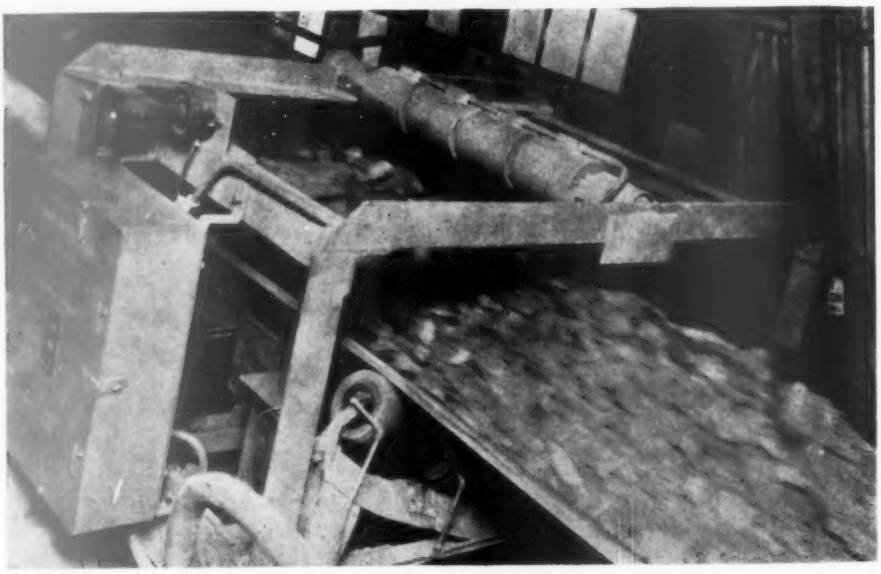
DISTRIBUTORS EVERYWHERE

● Magnetic Detector

The Dings Magnetic Separator Company has announced the development of the new Dings high intensity magnetic detector, designed to indicate the presence of tramp iron in non-magnetic materials. Available in sizes for installation on belt-conveyors ranging in width from 18 inches to 60 inches and over, the detector consists of a bank of highly magnetized primary poles which are located below the conveyor belt. Approximately 18 inches above the primary poles are the secondary or detection coils, which pick up the electrical impulse generated when tramp iron cuts the lines of magnetic flux emanating from the lower magnets. This small impulse is used to close a standard voltage circuit which in turn operates a relay switch capable of stopping the conveyor drive motor, sounding a horn or flashing a light.

The minimum volume of iron or steel upon which the iron detector will react approximates 0.2 cubic inches, although susceptibility varies considerably with the shape of the object, long thin pieces being more readily indicated than spherical or cubical pieces of equal volume. In most applications the detector is adjusted to less than the maximum sensitivity so that only large, dangerous pieces of iron will register.

The high intensity detector is particularly suitable for use with belt-conveyors handling excessively large tonnages of materials, and its effectiveness increases as belt-speeds become higher. The unit is easily installed in any existing conveyor or chute system.



The magnetic detector shown mounted on a belt-conveyor.

● Ankle Protector

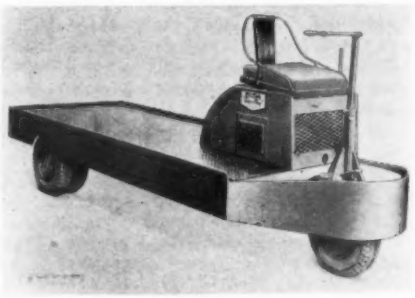
Ankle and foot protection against acids, alkalis, oils, solvents and greases is provided by a new spat announced by the American Optical Company, Southbridge, Massachusetts.

The spat is made from a coated fabric which gives the same protection as rubber but is much lighter in weight and extremely flexible.

Three snap fasteners at the top and two at the bottom make the spat easy to put on and adjust, and assure quick removal. An elastic strap fits under the instep. Large flare assures over-all protection of instep. It is neat, snug fitting and comfortable. Pants may be worn over the spat or tucked inside.

● Dual Wheel Truck

The Chore Boy, model FF, one-ton capacity, dual wheel truck, offered by The Buda Company, Harvey, Illinois, is a platform-type truck for handling heavy materials. It has ample deck loading space, (over 20 sq. ft.), reliable power, and operates 35 to 45 miles per gallon. Maneuverability, economy, convenience and mechanical dependability are claims made for it



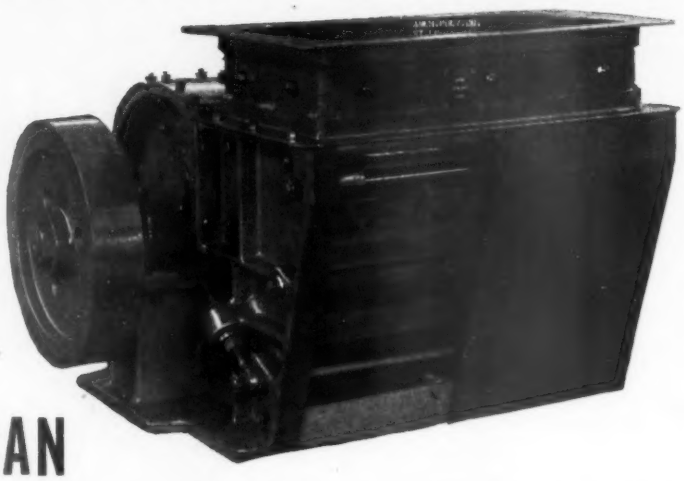
Platform type truck.

by the manufacturer. Other features are: Comfortable spring cushioned seat with form-fit back rest; Extra large non-skid deck, one ton capacity. (20.1 sq. ft.); Easy, one-hand steering; Simplified control . . . hand lever for forward, reverse and neutral; Heavy duty dual wheels, mounted on heavy drive axle and bearings; Hinged housing and seat can be thrown open to give access to entire power unit and drive; Brakes automatically applied when operator leaves seat; Convenient foot brake and accelerator; Electrically welded, reinforced steel frame.

● Crane Truck

The Elwell Parker Electric Company, Cleveland, announce the new model L-11C Combination Crane Truck. Due to the addition of a separate motor for raising and lowering the boom it has improved operating characteristics. In previous models a single motor served to raise and lower both boom and hook. By providing a separate motor for each function the operator is given a greater freedom of choice in manipulating the load. This 4-way truck, serving as a lift-truck, a load carrier, crane and tractor,

HIGHER capacity and crushing power



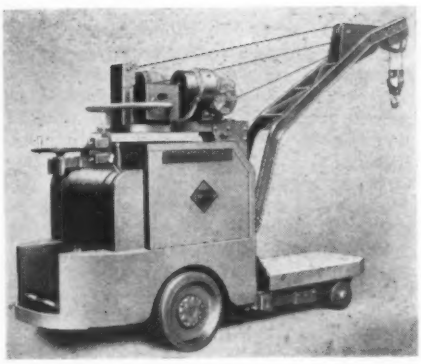
AMERICAN CRUSHERS

Specify AMERICAN Hammermills for "ceiling" performance in general stone crushing ability.

They consistently record new "highs" for capacity—up to 100 tons per hour—and hold the top marks for non-stop runs and operating efficiency.

Write for Bulletin

AMERICAN PULVERIZER CO. 1059 Macklind Ave. St. Louis 10, Mo.

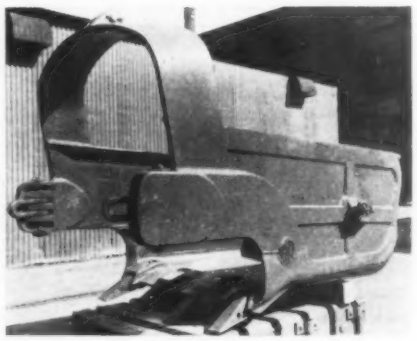


Crane truck.

loads itself either by picking up skid loads with the lift platform, or by lifting heavy parts and placing them on the platform for transport. Trailer cars may be loaded by means of the crane, which is available for heavy lifting at points where there are no overhead cranes. Has a capacity of 6000 pounds on the platform, 2000 pounds on the hook at 42-inch radius and 1000 pounds on the hook at 84-inch radius. Travels 6 miles per hour with no load, 5 miles per hour with full load under normal conditions.

● All-Purpose Bucket

Pettibone Mulliken, Chicago, are now in production with a new all-purpose Dragline Bucket and Pull Shovel Dipper that has some new features of construction that are of advantage in material handling operations. The bottom of the bucket is a full-length, one-piece manganese steel casting, which



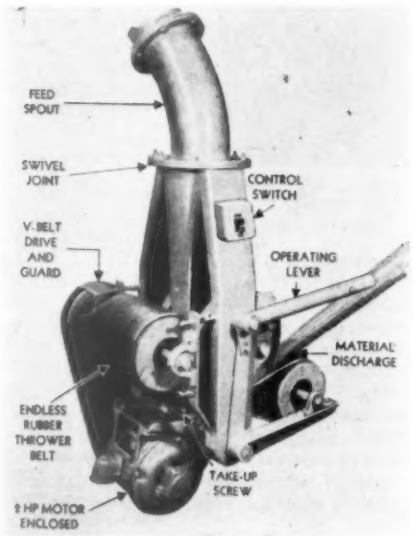
Dragline bucket

provides a foundation of great strength for the remainder of the bucket body, and makes possible integral tooth holders. Reversible socket type teeth are also of manganese steel. A solid manganese steel bottom makes possible the outside tooth holders to be placed at the extreme corners of the lip, thus making an effective wide bite, with the corner teeth breaking up the material—leaving the lip to perform the scooping-up function only. This Dragline Bucket is made in ½ and ¾ yard sizes. All dippers and buckets of the ½ and ¾ yard sizes have been designed and engineered to take a one size tooth, thus making complete interchangeability of teeth.

● New Box-Car Loader

The Stephens-Adamson Manufacturing Company, Aurora, Illinois, announces a new unit, the "Swiveloader", for loading and trimming box-cars with loose, granular, bulk material such as grain, salt, fertilizers, chips, crushed stone, coal, etc., up to two inches in lump size. The unit has a capacity of from 40 to 80 tons per hour depending on the type and weight per cubic foot of material being handled.

The "Swiveloader" is installed so that it can be swung into position just inside the car door. From this position all parts of the car can be loaded by simply swiveling the thrower unit on the feed spout, from which



Box-car loader.

it is suspended. Placement and operation of the "Swiveloader" can be handled by one man with a minimum of effort. Since the operator is not required to be in the car during actual loading, dust hazards are reduced to a minimum.

● Dust Hood

Now available—a new light weight hood offering full vision and practicability against fine nuisance dusts is offered by Industrial Products Company, Philadelphia. Con-

Dust hood.

structed of good quality cotton sheeting over a cloth cap with fibre frame window opening size 5" x 6". Ample vision in all directions. Window of cellulose acetate plastic is easily and quickly replaced when necessary. Tape tie inside bottom hem for pulling close to the neck if desired.

● Your country is still at war,
—are you?

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MINING
OIL FIELDS

LOGGING

SNOW REMOVAL
EXCAVATING
Where grades are steep and snow is deep

FLEXIBLE TRACKS
Result In Maximum Traction

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TRACTORS AND TRACK TRAILERS 5 TO 50 TONS CAPACITY

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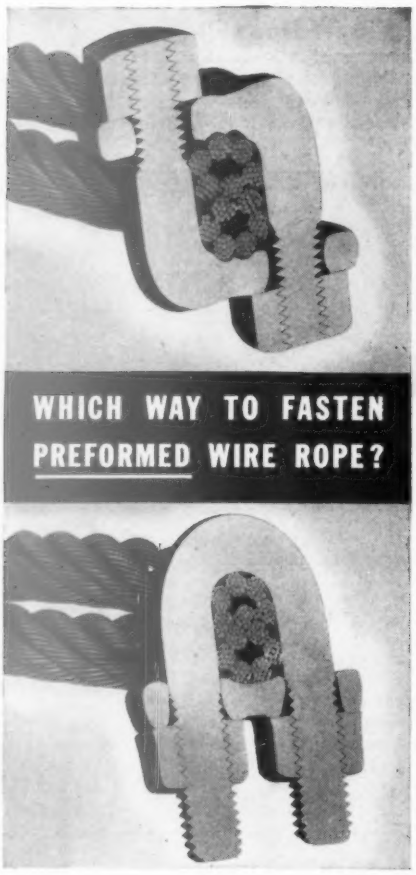
THE LINN MANUFACTURING CORPORATION
MORRIS, NEW YORK



The cross-section views show what happens to wire rope. In Fig. 1, Laughlin's "Fist-Grip" Safety Clip holds the 5/8" rope with hardly any distortion (note hemp centers). In Fig. 2, hemp center under U shows how rope is squeezed and flattened by U-bolt's smaller bearing area and "Finger-Pinch". Both were tightened to same tension by torque-indicating wrench.

Here's Why "Fist-Grip" Clips Work Better

Laughlin Safety Clips have identical saddles, flat sides; hold rope firmly without crushing. Saddles fit snugly against "live" and "dead" ends. Fewer clips deliver full rope power. The only clips with drop-forged bolts. Test them, for your rope's sake.

Distributed through mill, mine and oil field supply houses. Write for catalog. Dept. 3, The Thomas Laughlin Co., Portland 6, Maine.

LAUGHLIN

THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS

TRADE NOTES

R. C. Stenger

The appointment of Richard C. Stenger as sales manager, effective January 1, was recently announced by the Wolverine Portland Company. During 1944, Mr. Stenger acted as assistant sales manager for this company. Before joining the Wolverine organization in 1943 as a territory representative in southwestern Michigan, he had a broad background of business and sales experience, having been one of the top sales producers for a Johns-Manville distributor in the Chicago area. He has made his home in Kalamazoo for the past two years. The present officers of Wolverine Portland Cement Company are: Colby Stilson, chairman of the board, Roger C. Gleason, president, J. L. Nelson, vice president, J. Schaffmer, treasurer and comptroller, and Thomas M. Green, secretary.

Directors of Worthington Pump and Machinery Corporation, at its meeting in New York December 21, 1944, elected Clarence E. Searle president of the Corporation, to succeed Harry C. Beaver who was made vice chairman of the board and chairman of management committee.

Mr. Beaver has been president of the corporation since 1931, and Mr. Searle has been vice president in charge of sales

Hobart Ramsey

C. E. Searles

since joining the Worthington organization in 1932, following a long period of service in various executive capacities with the Allis-Chalmers Manufacturing Company of Milwaukee, Wisconsin.

Hobart C. Ramsey, vice president in charge of operations, was elected executive vice president. Edwin J. Schwanhausser, vice president in charge of the Corporation's manufacturing and sales operations in Buffalo, was elected vice president in charge of sales. Leslie C. Ricketts, manager of the corporation's Harrison Works, was elected a vice president. All changes will become effective January 1, 1945.

Merwin T. Farley was recently named supervisor of parts depots of Caterpillar Tractor Co., Peoria, Illinois, according to an announcement by E. W. Jackson, general parts manager.

Mr. Farley will devote his entire time and attention to the supervision and future development of the "Caterpillar" parts depot program, to provide prompt and accessible sources from which dealers within a depot area can replenish their parts stocks. Not merely a wartime expedient, the appointment of Mr. Farley as supervisor indicates planning for also saving customer and dealer time in the post war era of reconstruction—with faster machine maintenance service. At present these depots are maintained at Kansas City, Kan.; Memphis, Tenn.; Rensselaer, N. Y.; San Leandro, Calif.; and Spokane, Wash.

Chas. A. Cook

Charles A. Cook has been named assistant to S. W. Keese, chief engineer of The Timken-Detroit Axle Company, Wisconsin Axle Division. He will have charge of transmission design and development for postwar commercial vehicles. Since 1913, Mr. Cook has been active in automotive egineering, and since 1934 has been chief executive engineer with the Fuller Manufacturing Company, in charge of production design, metallurgical and experimental department. Prior to joining Fuller, he was connected with a number of other truck and passenger car manufacturers, specializing in transmission design since 1925.

Walter M. Annette, for twenty-six years manager of the New York City branch office of Hercules Powder Company, retired from the service of the company December 31, the company announced recently.

Mr. Annette served with the company in two World Wars and in the interval between was a leading figure in the chemical and foreign trade circles in New York. During World War I Mr. Annette was mayor of Nitro, West Virginia, the sprawling boom town created when Hercules Powder Company constructed a smokeless powder plant there for the United States Government.

Wesley L. Wilson has been appointed commercial manager of the Quartz Crystal Division of North American Philips Company, Inc., according to an announcement by Pieter van den Berg, vice president and general manager. Mr. Wilson has been purchasing agent for the company since 1942.

C. F. Patterson recently joined the rapidly expanding field engineering staff of the Eutectic Welding Alloys Company, New York. A native of Canada, Mr. Patterson will service that company's customers in Michigan. Before joining Eutectic, he served the Murray Corporation for 18 years. He is a graduate of Galt Collegiate Institute, Regina Collegiate Institute and Galt Business College, all of Canada.

John A. Owen has joined the staff of the Eutectic Welding Alloys Company,

New York. Prior to his association with them, Mr. Owen, a veteran welder, owned and operated a welding and machine shop for 28 years. He will serve as field engineer for the state of North Carolina.

Charles Bray

Charles C. Bray has been appointed assistant to the manager of the Worm Gear Division of the De Laval Steam Turbine Company. Prior to accepting this position, he served as a metallurgist for the special steel department of the Philadelphia office of Joseph T. Ryerson & Sons. Mr. Bray is not a newcomer to the De Laval organization, having served for ten years as a worm gear sales engineer in the De Laval Chicago office before leaving to join the Ryerson organization.

R. G. LeTourneau, Inc., Peoria, Illinois, recently announced the the promotions of Cloyd W. Richards to assistant service manager and Sam E. Beebe to manager of service engineers. Mr. Richards, with LeTourneau since July 5, 1937, spent one year in the parts department before becoming service publications editor. Under his very capable supervision, numerous valuable technical manuals re-

Cloyd Richards

Sam Beebe

garding maintenance and operation of LeTourneau equipment have accompanied LeTourneau machinery to all the war fronts. Mr. Beebe, with LeTourneau since August 1, 1937, as eastern service manager, has been assigned to highly specialized current and post war service research duties. He will report LeTourneau shop and test farm data, study LeTourneau service in the field and travel throughout the nation to confer with contractors and to co-operate with trained LeTourneau service engineers working throughout the United States and Canada.

J. E. Savacool, vice president and comptroller of Mack Trucks, Incorporated, was recently appointed a member of the board of directors. He will continue to hold those offices, as well as continuing as a director of Mack Manufacturing Corporation.

Davey Compressor Company of Kent, Ohio, has announced the appointment of Hoye and Williams, 1417 Dalzell Street, Shreveport, Louisiana, as agents for the Davey line in the northern Louisiana territory, and the addition of General Machinery and Equipment Co., Incorporated, 801-15 Woodland Avenue, Kansas City 6, Missouri, as a new franchise dealer for Davey products which include portable and stationary compressors, heavy-duty truck power take-offs and pneumatic saws.

The Chain Belt Company recently announced the appointment of M. D. Moody, Jacksonville, Florida, as distributor of Rex construction machinery, which includes pavers, mixers and pumps, in that area.

M. D. Moody is well known by contractors and construction men throughout Florida, having been in business in that State for the past 28 years. His son, M. D. Moody, Jr., will be associated with him.

Leonard Eger, development expert of the Goodyear Tire & Rubber Company, has been appointed as special V-Belt representative for Goodyear in the Chicago district, according to an announcement today by W. C. Winings, manager of Goodyear's mechanical goods division. For the last several years, Eger has been stationed in Detroit to assist in development work on V-Belts for military equipment.

J. E. Thomas has been named manager of cement sales in the Industrial Products Sales division of The B. F. Goodrich Company, it is announced by E. F. Tomlinson, division general manager. Thomas will direct the sale of all adhesive materials handled by the division. He came to the company in 1930, and for the last three years had been engaged in work on war contracts.

P. S. Dickey

The appointment of P. S. Dickey as chief engineer of the Bailey Meter Company, Cleveland, was recently announced. He will supervise all engineering, research and design activities for the company, assisted by H. H. Corries, assistant chief engineer, and R. E. Clark, manager of contract engineering. As research engineer, Mr. Dickey has conducted numerous studies here and abroad on the problems involved in the control of both forced and natural circulation boilers in stationary, marine and mobile service. He is the holder of numerous patents, and author of technical papers and articles on measurement and control as applied to power and process operations.

H. H. Gorrles has been associated with the company since his graduation from Rensselaer Polytechnic Institute in 1927; and R. E. Clark has completed 20 years service with Bailey Meter Company.

W. H. Brewer, general factory manager of the Independent Pneumatic Tool Company, Aurora, Illinois, recently retired from all active work with that com-

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Any size or style screen, in thickness of steel wanted with any size perforation desired.
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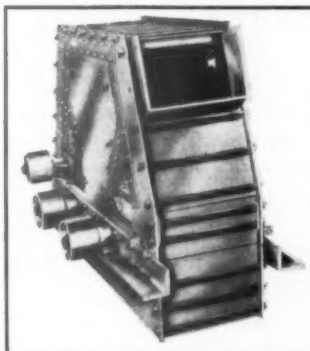

This new double-impeller crusher will produce from 100 to 150 tons per hour of material passing 80% through a 1-inch mesh.

It's compact in design, light in weight (12 tons), and saving in power (from 50 to 75 horsepower drives it). And, above all, it's

Adaptable to portable or stationary work.

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NEW HOLLAND MACHINE CO.
NEW HOLLAND PENNSYLVANIA

Capacity
26½ Cu. ft.
51⅜" Width
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Outstanding Bucket Value!

A "COMPLETE" Round Tipover Dumping Bucket with semi-automatic latch.

Ideal for mining, excavating or bulk transfer operations.

This bucket will dump with a slight pull when loaded, right itself and automatically lock in position when empty.

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pany. After a 36-year career in the plant, when he had directed production of Thor tools to more than five times the volume of any previous period in the company's history, ill health forced the factory head's decision.

Paul J. Wolfert, assistant to the manager of construction equipment of the Blaw-Knox Company, has been promoted to export department engineer, according to an announcement made by the company.

He will take up his new duties in New York on Jan. 2, and will assist H. T. Schwier, export manager. Mr. Wolfert will be engaged in the promotion and sale of all the various Blaw-Knox products for the export trade.

Last year Mr. Wolfert was asked to serve the U. S. Army corps of engineers as an expert consultant, and spent some time in the European theater of operations advancing the construction of airdromes and depots. He is a professional engineer, registered by the state of Ohio.

The M-R-S Manufacturing Company, producers of Mississippi Wagon hauling units, plans to increase its production in 1945, according to an announcement by L. R. Simmons, general manager.

"Our present plans call for double production of Mississippi Wagons during the coming year as compared to our 1944 production," Mr. Simmons said. "This increase in output is being made due to increased demands for this type of hauling equipment. During the past year, we have sold fleets of Mississippi Wagons throughout the United States and in foreign countries. Reception of this new type of hauling equipment has been most gratifying." The Mississippi Wagon is designed to haul dirt, gravel, topping, coal, sand, limestone and other general hauling material. Distribution during the past year has gone to levee contractors, road contractors, counties and municipalities and foreign countries. The sales organization of M-R-S Manufacturing Company is headed by C. H. King, general sales manager.

In response to enthusiastic reception, Allis-Chalmers Mfg. Company for the second consecutive year will honor the men and women of one American industry each month on their Saturday night broadcasts of the famous Boston Symphony Orchestra.

On January 27th management and labor of the coal industry will receive the first tribute in the new series of seven salutes. Other industries scheduled for the 1945 broadcast season are marine, railroad, processed foods, textile, automotive, and aircraft.

"It is a well-known fact that American industries are reluctant to publicize the tremendous contribution they are making to the war effort," says W. C. Johnson, Vice-President of Allis-Chalmers. "But when someone else pays tribute to them, their efforts are clearly drawn into focus and assume additional weight. That is the reasoning behind the 'Salute to Industry' series on our Boston Symphony broadcasts."

Hewitt Rubber Corporation, Buffalo, in the industrial rubber business for 85 years, stated that its recently-announced expansion program will permit increased output of conveyor belts, transmission belts and many types of industrial hose. In making the announcement, Thomas Robins, Jr., president of Hewitt, revealed that wartime requirements have greatly expanded their facilities for production of these articles.

Citing that Hewitt's production facilities have been used to build war equipment for more than five years, Robins said this policy will continue until the war is won, or until the U. S. and Allied Nations have enough equipment to finish the job. This manufacturer played a large part in developing the self-sealing gas tank, and was the first company in volume production. It is the largest producer of these bullet-sealing tanks for fighter and pursuit planes. During the London bombings early in the war, Hewitt supplied England with more than five million feet of fire hose, which was one of the most important early war production assignments given to any rubber company. Current important war orders include conveyor belts for the present coal mine mechanization programs in England and Russia.

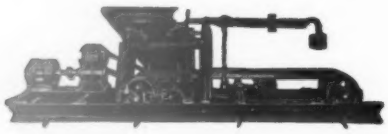
The Davey Compressor Company of Kent, Ohio, has announced the appointment of The Major Equipment Company, Cambridge, Ohio, as a distributor to handle sales and service of Davey equipment in the southeastern counties of Ohio, which includes portable and stationary compressors, heavy-duty truck power take-offs and pneumatic saws.

HIGH Speed and accuracy in weighing raw and finished materials means

HIGHER production and economy with

HIGHEST operating profits

SCHAFFER POIDOMETER



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FEBRUARY, 1945

The CONCRETE MANUFACTURER

A Special Section of ... PIT AND QUARRY

STEARNS' Post-War Contribution

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ADAPTABLE TO JOLTCRETES

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AVAILABLE FOR POST-WAR NEEDS

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The CONCRETE MANUFACTURER

FEBRUARY, 1945

A SPECIAL SECTION OF PIT AND QUARRY DEVOTED TO PRODUCTION OF CONCRETE PRODUCTS AND READY - MIXED CONCRETE

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Important War-time Job Being Done by California Company

A concrete-pile casting plant on the Oakland Estuary, owned and operated by the Frederickson & Watson Construction Company of Oakland, California, is doing an important war-time construction job in the San Francisco area.

The plant has already produced and shipped $2,750,000 worth of the huge piles, which are produced by a special process developed by the company. This process involves the casting of the big units one on top of the other, separation being accomplished after curing is completed.

Otto Bonneson is superintendent of the plant. P. L. Wilcox is the general superintendent.

Concrete Products Plant in Phoenix Is Enlarged

The Builders Supply Corporation of Phoenix, Arizona, has recently enlarged its concrete-products plant located at 3800 North Central Avenue. The new production machine just installed is a Stearns Joltcrete, which was delivered and placed in service by the Smith-Booth-Usher Company of Phoenix, Stearns distributor in the southwestern states.

New Type Concrete and Steel Column Developed

A new type of structural column of concrete and steel, developed in the Technological Institute of Northwestern University for use in high buildings and long-span arch bridges, has lightweight and great strength and probably will be used widely in the future in place of more costly steel columns. It is a type of reinforced-concrete compression unit, with about 15 per cent. by volume of steel and 85 per cent. by volume of concrete, which is about as heavy as aluminum and stronger than solid structural steel.

The column consists of extremely high-strength concrete wrapped about with a high-strength spiral steel wire, which is always under tension, to form a core which is then covered with a fireproofing concrete. An 8-inch core with two inches of fireproofing concrete covering will take a safe load of 1,000,000 p.s.i., it is claimed. In laboratory tests it carried a load of 2,500,000 pounds, and at this load the elastic limit of the steel had not been reached.

The new type of structural column was developed under the direction of George A. Maney, chairman of the university's department of civil engineering, in a program of finding new materials to meet critical needs sponsored by the War Production Board.

"The features that distinguish the new type of column from the ordinary spirally-reinforced concrete column," Professor Maney says, "are, first, an extremely high-strength concrete, and, second, a spiral wrapping in which the steel is always under tension even though there is no load on the column. The latter feature is extremely important in that it allows the restraining steel spiral to act as soon as any load is applied, whereas, in an ordinary reinforced concrete column this is not the case."

This result is accomplished by using a very small amount of water and applying a great pressure to the concrete unit while it is being compressed. The unit is not difficult or expensive to make and requires only ordinary plant equipment except for the press that applies the load.

Bulk of Graystone Work Goes to Defense Plants

Joseph W. Schulze of Graystone Tile Company, Los Angeles, reports an active market with the bulk of the output going into machine shops and other defense plants. The company contemplates a modernization program with the installation of new equipment.

Pouring of concrete has started for the new $1,200,000 Sweetwater River Dam near Alpine, California, according to L. A. Williamson, manager of the California Water & Telephone Company, builder.

The dam will store water for National City, Chula Vista, and other southern California communities. It will be 215 feet high and 600 feet wide.

New California Plant Produces Light-Weight Aggregates for Concrete Ships and Barges

The Airox Company of Los Angeles Helps Overcome Steel Shortage With Substitute Concrete Material.

By HARRY UTLEY

another ON THE SPOT report

THE scarcity of steel in this war has proved the worth of lightweight concrete as an acceptable substitute material for the building of barges and self-propelled vessels. On the east coast a fleet of such seagoing ships has hit the ways at Tampa Bay during the last year or so, the aggregate being supplied by a plant across the bay which utilizes nodulized fullers' earth to produce the lightweight aggregate *(P&Q,* July, 1944, pages 172-175; October, 1944, pages 56-59).

On the Pacific coast much of the lightweight aggregate which has gone into similar concrete barges and ships has been produced in a new plant operated by the Airox Company of Los Angeles. This plant produces a new type of aggregate made by burning diatomaceous shale at the deposit, which is located near Casmalia, in Santa Barbara County. Briefly, this process consists of making a sized aggregate which is vesiculated by the expansion of gases generated within the material by heat and is then sealed by fusing the surface of each pellet. Concrete made with Airox aggregate is claimed to have about one and one-half times the compressive strength of ordinary concrete, while its weight is about 60 per cent. of that of ordinary concrete.

• View of plant showing the conveyor which runs to the screen over bin ahead of the kilns.

• This general view of plant shows the arrangement of the tandem kilns. In place for future use is the feed conveyor to a second kiln.

The deposit was located by Professor Raymond E. Davis of the University of California, Berkeley, and the manufacturing process was developed by him in an experimental plant at the university. Because of the experience gained in his diverse work along these lines, Professor Davis also served as consulting engineer on the Florida plant previously mentioned, although the manufacturing processes involved in the two plants differ considerably.

The deposit at Casmalia is classified as a diatomaceous mudstone containing varying amounts of hydrocarbons. It is a portion of the Sisquoc formation consisting of lower to middle Pliocene sediments. Much of the stone is impregnated with petroleum which helps to support combustion during the burning process. Tests are being carried on which may allow the use of material containing little or no oil, but sufficient hydrocarbons in other forms to fulfill the requirements of the process.

The Airox Company was formed in July, 1942. A. P. Pratt is president, E. M. Markell is general manager, D. A. Sanford is plant superintendent, and R. L. Harsin is the chemist. Construction of the plant was started in December, 1942, the machinery and equipment being supplied by the Defense Plant Corporation, but operations are not supervised by the government. Production began in May, 1943, and the plant has been in almost constant operation ever since.

The overburden is removed by scraper and bulldozer and the deposit is drilled with Ingersoll-Rand and Sullivan jackhammers. Trojan 20 per cent. gelatin dynamite is used for shooting and the fragmentation is such that no secondary blasting is required. A Bucyrus-Erie ¾-cubic yard gasoline shovel loads the broken stone into 7-cubic yard Dodge dump

• This view shows belt conveyor running from cooling stockpiles to truck-loading bins.

trucks which transport it about 300 feet to a hopper under a rail grizzly with 10-inch square openings. The oversize is sledged through.

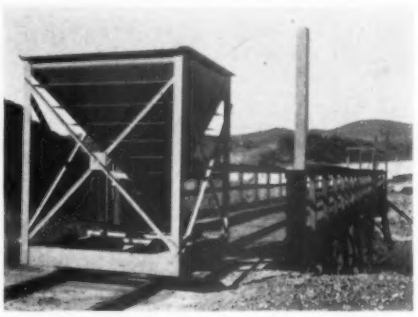
A Diamond reciprocating - plate feeder passes the stone from the plant hopper to a 30- by 30-inch Jeffrey single-roll crusher equipped with teeth. Further reduction is accomplished by a pair of 24- by 30-inch Jeffrey rolls which follow the primary crusher. The crushed material is then fed to a 4- by 10-foot Symons vibrating screen with 1-inch woven-wire mesh on its single deck. The oversize scalped off is returned to the secondary rolls and the screen "throughs" are carried on a belt-conveyor to the bin structure where they are sized by another 4- by 10-foot Symons screen with three sizes of cloth mesh on a single deck to produce ¾-, ½-, and minus ¼-inch raw material. The sized stone is stored in a 4-compartment bin with a total capacity of about 1,000 tons.

From the bin the material goes *via* belt-conveyor and elevator, to a conical steel feed tank equipped with a screw-feeder which supplies the first of the two kilns.

The two rotary kilns, each 7 feet in diameter and 125 feet long, are arranged in tandem. They were formerly used in a California cement plant but were rebuilt for use by the Airox Company. The first, or primary, kiln drives off and burns the excess oil and entrapped gases in the material, some degree of calcination also occurring. The partially-processed aggregate is now discharged directly from the primary to the secondary kiln where complete vesiculation takes place. A temperature of about 1,800 degrees F. is maintained in the first kiln and temperatures from 2,250 to 2,300 degrees F. are maintained in the second. These higher temperatures in the secondary kiln are sufficient to cause incipient fusion on the pellet surfaces, sealing the porous interior of the particles. To prevent clinkering, the pellets are dusted with silica flour in kiln No. 2, the 200-mesh silica being blown in through a pipe entering the kiln at the firing end. Both kilns are fired with oil through Pan - American burners. The kilns are lined with firebrick and kiln No. 1 also has lifters through its entire length to increase the agitation of the material during rotation. These lifters were cast in place, using a concrete mixture composed of high-alumina cement and the Airox aggregate. This has proved to be such a durable, spall - resistant refractory material that the company plans to use it in both kilns when it becomes necessary to reline them.

As it emerges from the last kiln, the hot aggregate is transported away for cooling by a special dump-body car built of heat-resistant steel, which operates on narrow-gage rails along a trestle away from the mountainside alongside which the kilns are arranged. The car has a capacity of about 1¾ cubic yards and was built by Garlinghouse Brothers of Los Angeles. A long, double-swiveled distributing chute builds up storage piles on the level below the trestle where the Airox aggregate is allowed to cool. Beneath the piles a belt-conveyor operates in a concrete reclaiming tunnel, hand - controlled gates funneling the material on the belt, which inclines upward after leaving the tunnel to discharge at the top of the truck-loading bins. Here a Diamond 3- by 8-foot triple-deck screen does the final sizing and the material is chuted to its proper

(*Continued on Page* 116)



• Traveling dump car which distributes hot aggregate from trestle on cooling stockpile.

• Left—Fire-brick lifters in Kiln No. 1 which improve heat transfer efficiency. Right—View of Kiln No. 2 with part of fuel-oil firing system at left.

• Downhill crusher setup with conveyor to screen over raw-material bins.

Birmingham Slag Co. Now Operates Three Modern Concrete-Block Plants

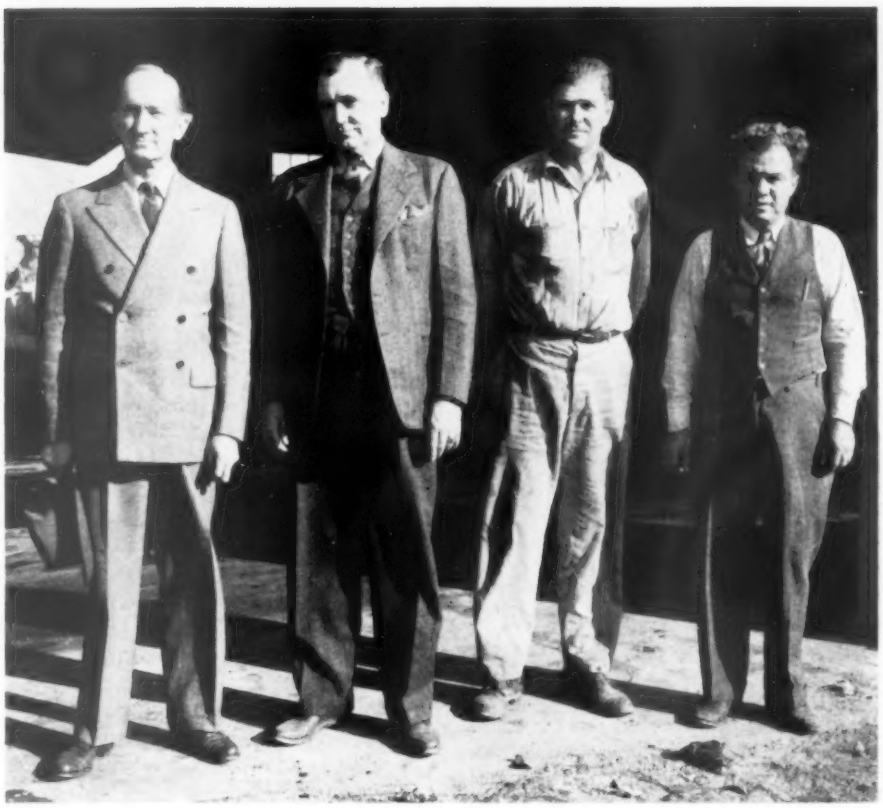
Two plants in the Birmingham area, one at Stockbridge, Georgia, have made an important contribution to the war effort.

By
W. E. TRAUFFER and
WILLIAM M. AVERY

another ON THE SPOT report

THE Birmingham Slag Company, Birmingham, Alabama, has received considerable publicity in these pages on its widespread activities in the production of slag, sand and gravel, and ready-mixed concrete[1] but little has been said anywhere about its concrete-products operations. At present three modern plants are operated, two by the parent company at Ensley, Alabama, and at Alabama City, Alabama, and one by the Stockbridge Stone Company, at Stockbridge, Georgia. In the last few years these three plants have supplied vast numbers of concrete blocks for army camps, air bases, war plants and housing projects, etc., ranging from the Atlantic coast as far west as Texas. Together with the company's four slag-aggregate plants, three sand-and-gravel plants, three crushed-stone plants, three ready-mixed concrete, and three bituminized-aggregates plants—all permanent—and numerous portable and temporary operations, they have contributed heavily to the success of our war-production and training programs.

[1][Articles describing various operations of the Birmingham Slag Company and its affiliated subsidiaries in recent years were published in the November, 1943, January, 1942, July, 1941, July, 1940, August, 1938, and July, 1937, issues of PIT AND QUARRY.—ED.]



• Left to right: A. E. Lloyd, manager, Ensley Brick and Tile Company; D. T. Mann, district manager, Gadsen operations; H. O. Moore, superintendent, Alabama City Brick and Tile Company; W. J. Shaw, construction superintendent.

The company first went into the concrete-block business in 1921, but operations were conducted on a comparatively small scale until after the depression. In 1940 the Alabama Cement Products Company was merged with the company's operations at Ensley and early in 1942 a new plant was put in operation at Stockbridge. A Besser Super Tamper block machine had been installed at Ensley in 1938 and this was replaced late in 1941 with a Besser Super Vibrapac plain-pallet stripper block machine. A similar machine was installed at Alabama City early in 1942 and the new Stockbridge plant is similarly equipped. The Alabama City plant was recently moved to a new location and is described in detail later in this article.

All these plants were put in condition to handle the huge war demand which was already beginning to materialize at that time and which, until the last few months, kept these plants operating at peak capacity. The location of these plants in the heart of important war production and training areas put them in an ideal position to meet these demands. The Ensley plant is only a few miles outside Birmingham; the Alabama City plant is 60 miles northeast of Birmingham and only 5 miles from Gadsden; the Stock-

• Block plant of the Stockbridge Stone Co. with kilns in foreground.

bridge plant is about 20 miles southeast of Atlanta.

These plants all adhere in a general way to the more or less standardized design and methods of operation common to this industry. The only important difference in design is the fact that the Stockbridge plant

• View of the new batching plant at the Alabama City plant. Block storage bin on left receives overflow cement from the batching bin.

has no provisions for the storage of aggregates. This is not necessary because of the assured and ample supply of material near this plant. All three plants use sizes of fine material-granite at Stockbridge and slag at the other two plants—which have always been produced incidental to coarse-aggregate production and in excess of demands. As a result large stock piles of these materials have been built up at each plant. On special orders Superock lightweight slag aggregate is also used.

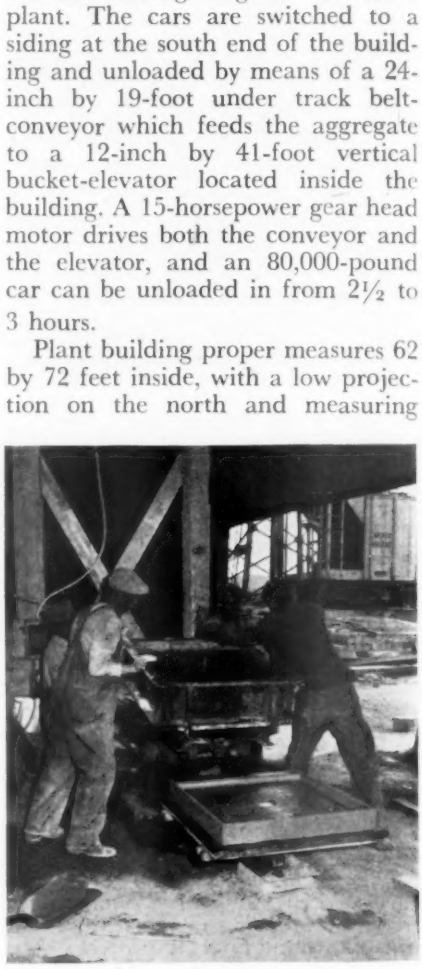
The slag used in the two Alabama plants makes a block of relatively high tensile and compressive strengths and the low volume change is said to make it ideal for wall construction. A 1:7 mix is ordinarily used and this yields from 18 to 20 standard 8- by 8- by 16-inch blocks per sack of standard Portland cement. The cured block weighs about 35 pounds and has a compressive strength of from 1,250 to 1,500 p.s.i. The absorption is average and the insulation and fire-resistance values are fairly high.

The granite aggregate used at Stockbridge makes a block with a pleasing cream color. The only disadvantage is the slightly less workable concrete mixture resulting from its use which slightly slows down the rate of production. A 1:7 mix is also used ordinarily and this yields from 18 to 20 standard blocks per sack of cement. The compressive strengths of these blocks range from 1,500 to 1,900 p.s.i., they have from 6½ to 7 per cent. absorption and average volume change. The cured standard blocks weigh from 38 to 40 pounds each.

Considerable experimenting has been done with admixtures with varying results. In the granite blocks the result has been a more workable concrete and a more waterproof block. The results were less favorable with the more porous slag aggregate. Some advantage was found in using slag dust as an admixture in the slag blocks. Standard Portland cement is used except for rush orders which require the use of high-early-strength cement.

The Alabama City block plant and the Gadsden slag plant are located on the same property about a quarter of a mile apart. Despite this elbow-to-elbow relationship of the two plants, open-top cars are used for transferring slag to the block plant. The cars are switched to a siding at the south end of the building and unloaded by means of a 24-inch by 19-foot under track belt-conveyor which feeds the aggregate to a 12-inch by 41-foot vertical bucket-elevator located inside the building. A 15-horsepower gear head motor drives both the conveyor and the elevator, and an 80,000-pound car can be unloaded in from 2½ to 3 hours.

Plant building proper measures 62 by 72 feet inside, with a low projection on the north and measuring



• This view shows a shower base being removed from vibrating table at the Ensley plant.

62 by 32 feet for the curing rooms. The walls are of standard 8- by 8- by 16-inch blocks with 16- by 16-inch pilasters to carry the trusses, which were built of 4-inch standard pipe, electric-welded. The high portion of

• Left—View of Alabama City Brick and Tile Company's new concrete-block office building. Right—The Alabama City block plant seen from the storage yard, showing paved runway and railroad siding.

the building over the bins is 43 feet from floor to roof. The elevator discharges on a 4- by 8-foot double-deck screen which is fitted with 5/16-inch and 3/16-inch mesh cloths. The plus 5/16-inch oversize from the top deck, amounting to 15 or 20 per cent. of the total volume of material handled, drops through a steel chute to an Allis-Chalmers No. 322 type R crusher. The crusher, which is located 4 feet above floor level, discharges the material back into the bucket elevator. The plus 3/16-inch and the minus 3/16-inch materials drop from the screen into two of the compartments of a Blaw-Knox 3-compartment bin. Each section of the bin has a capacity of about 30,000 pounds.

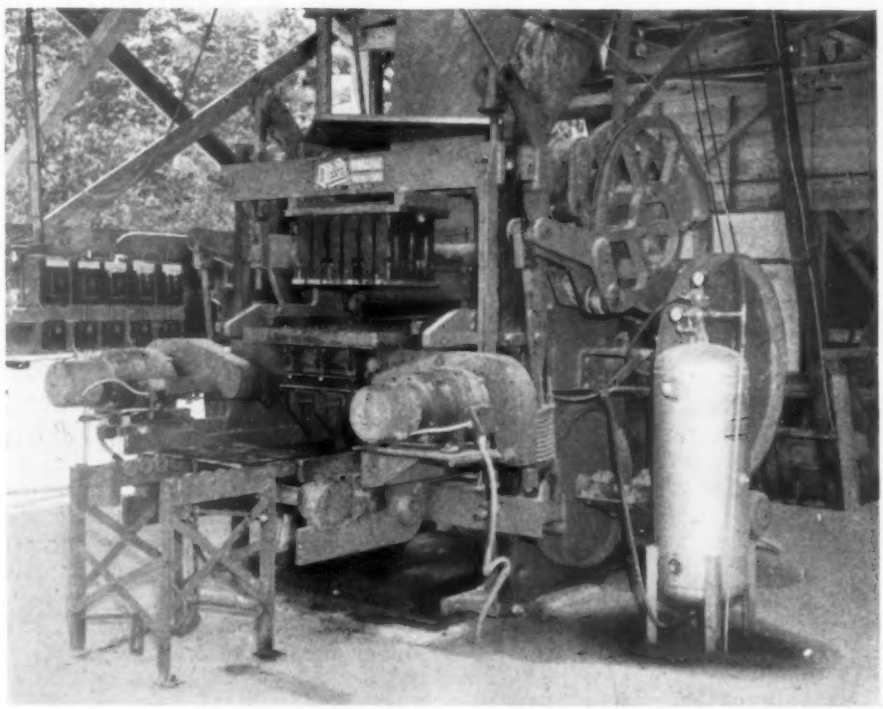
Very much the same general scheme is used for loading bulk cement into the plant, except that a 10-inch diameter by 19-foot screw conveyor is used under the track for unloading the 400-barrel hopper-bottom cement cars. The screw conveyor feeds a bucket elevator which is identical to the one used for handling aggregates, and the elevator discharges directly into the cement compartment of the Blaw-Knox bin. When the operating bin is filled to its 200-barrel capacity, the cement overflows a weir in one side of the bin and drops into a 12-foot square by 20-foot high storage silo. The silo, which is built of concrete and masonry blocks and is wholly within the plant building, has a capacity of 380-barrels. A 10-inch diameter by 18-foot screw conveyor runs from under the silo to the cement elevator for feeding back to the operating bin. A 400-barrel car can be unloaded in from 4 to 5 hours, and the clearance between the under-track hoppers is such that both cement and slag can be unloaded at the same time. It is possible to operate the plant about a week on stored cement, but the aggregate bins have to be refilled every 5 or 6 hours.

• The tank-mounted air compressor which supplies air for off-bearer at the Stockbridge plant.

The Blaw-Knox batching plant includes a standard three-beam scale for weighing cement and two sizes of aggregate and in addition there is a 200-gallon tank and a 2,000-pound scale for weighing water. The batching plant had been used in the company's ready-mixed-concrete operations prior to its inclusion in the new block plant.

The 50-cubic foot Besser mixer, driven by a 30-horsepower Allis-Chalmers motor, is located at floor level below the batching plant, and dumps into a skip-hoist which rises from a pit between the mixer and the block machine.

A unique feature in the operation of the Besser Super Vibrapac is the drag chain conveyor located in a pit formed in the machine foundation for feeding off-standard mixes, imperfect blocks and the normal droppings from the block machine back to the mixer. The pit is located on the centerline of the block machine, and is 30 inches wide at the top, 22 inches wide at the bottom, and 30 inches deep below floor level. The drags consist of 2- by 2- by ¼-inch angles bolted to two strands of Link-Belt C-102 chain running over 18-inch pitch-diameter sprockets set 19 inches apart and 17½ feet from head shaft to tail shaft. The angles are 22 inches long, and just clear the battered sides of the pit as they slide on the ¼-inch steel plate which lines the bottom. The 5-horsepower motor and the 6-to-1 ratio speed reducer are also below floor level, and the chain is driven at a speed of 250 feet per minute. A chute formed in the foundation at the back end of the drag-conveyor pit feeds the material by gravity to a bucket elevator located 7 feet from the centerline of the block machine. The elevator is set in a pit 11 feet below floor level in order to provide ample fall for the material, which is raised some 40-feet and discharged into a closed steel chute feeding the mixer.



• Block machine at the Stockbridge plant, with mixer and skip in background.

• Lift truck carrying rack of cured blocks to car for loading at Alabama City.

An installation similar to this is in operation at the Birmingham Slag Company's Ensley plant, where the arrangement was first worked out. The drag conveyor runs constantly when blocks are being made, and when, as will happen in even the

(*Continued on Page* 115)

The CONCRETE MANUFACTURER

National Brick Company Employs High Pressure Steam Curing in New Plant

Organized in 1943, this new company is one of the latest east-coast concrete products companies to employ modern methods to achieve uniform quality in the manufacture of concrete blocks.

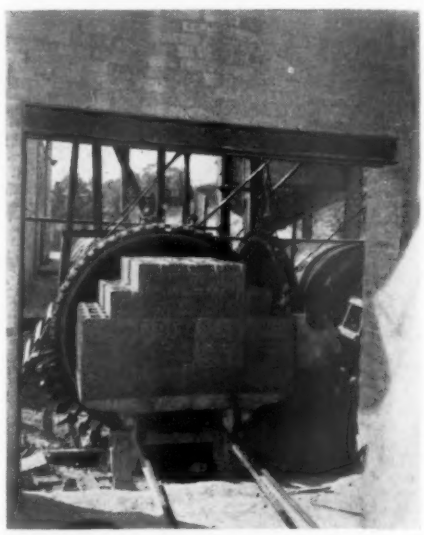
By WILLIAM M. AVERY

another ON THE SPOT report

THE National Brick & Supply Company of Terra Cotta, D. C., is one of the latest east-coast concrete-products companies to adopt the use of high-pressure steam curing. The new company, which was organized in August, 1943, took over the property of the National Brick Company, Inc., manufacturer of sand-cement brick, operated by C. C. Dalley. A new masonry and structural-steel plant building has recently been completed to house entirely new equipment for the production of cinder blocks.

The property is situated in the middle of an extensive silica-sand bank, and this material is recovered on the site by hand shovels and a portable conveyor. The exceptionally uniform and clean material in the deposit requires no screening or washing. Crushed and prepared cinders are shipped from Chester, Pennsylvania, and delivered in hopper-bottom cars to the plant siding. They are dumped on a Farquhar portable over-track conveyor which has been adapted to undertrack service in this installation. An 18-inch by 60-foot Columbus Conveyor Company belt-conveyor, equipped with a Goodrich belt, feeds the cinders to a ground-level steel hopper, where oversize particles are taken out on a 1-inch grizzly. A Columbus bucket-elevator lifts the material approximately 45 feet from the hopper to a 2-compartment steel bin which has sufficient capacity to supply the plant for two days.

The cinders are weighed in a Newark weigh-batcher, suspended from 4 monorail trolleys which run on 2 parallel over-head I-beams. The batcher is equipped with a William S. Meyer scale. The mixing is done in a 50-cubic foot Besser mixer installed in a pit below the batcher. Standard cement is added from bags and water and silica sand are introduced in accordance with the operator's judgment. The small amount of sand used in the mix produces an unusually fine-surfaced block without materially increasing the weight or destroying the cellular nature of the aggregate. The mix is elevated by a skip hoist and dumped in an inclined steel chute from which the Besser Super-Vibrapac is fed. A Besser pneumatic off-



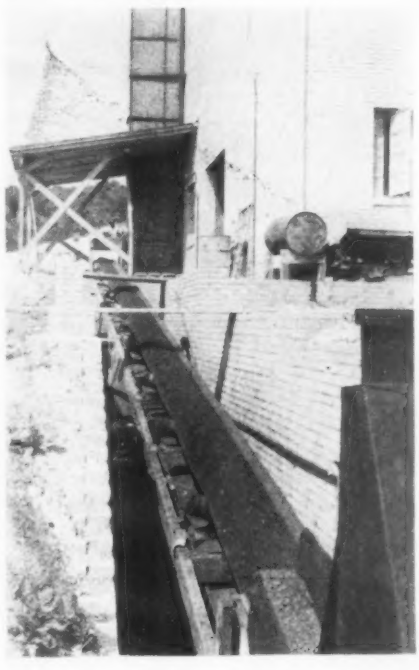
One of the 6-foot diameter by 72-foot long high-pressure curing cylinders. Blocks are loaded directly on truck, or lifted as a unit from the cars with a high-lift fork truck.

• General view of plant, below, with elevator in foreground. Concrete runways in foreground give a neat, efficient appearance to the yard.

Right, below — At the loading platform where the blocks are taken from mine-type flat cars to the waiting trucks.

Close-up view of the first step in the unloading of cinders by under-track conveyor to a moving belt.

Cinders are discharged by conveyor through grizzly to the hopper under elevator shown in general view of plant.



The cinders are here shown on the belt conveyor direct from the railroad siding to the elevator in background.

bearer is used to transfer the blocks from the machine to steel racks, which are picked up by a "Hydrolectric" hand-led truck and stored overnight in one of four steam-curing rooms.

On the following day the racks are removed and the partially-cured blocks are loaded on small flat cars which operate on a narrow-gauge track. The flat cars are then pushed into either of the two 6-foot diameter by 72-foot long high-pressure steam autoclaves, where the blocks are finally cured.

When they are removed from the cylinders the blocks are either loaded directly on trucks or lifted from the cars as a unit by means of an Erickson high-lift fork truck. This is accomplished by piling the bottom course on the cars so that the core openings in the blocks run horizontally to receive the tines of the fork. All the runways in the storage yard are paved to facilitate piling with the fork truck.

Weigh larry, suspended from four monorail trolleys, discharging to 50-cubic foot mixer.

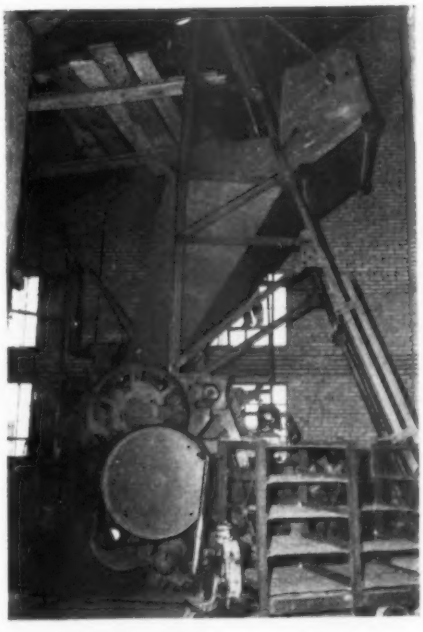
This plant is now producing 5,100 units (8- by 8- by 16-inch equivalents) per 9-hour day, and normally employs 15 men per shift. In addition, when labor is available, concrete brick are being produced on 3 Jackson & Church presses, and cured in the high-pressure autoclaves.

Edmund H. Brooke, formerly head of the Concrete Products Unit, WPB, is general manager, and Larry Frankenfield, superintendent.

● Your country is still at war, —are you?

Hydraulic lift truck with a rack of cinder blocks as it is being removed to the curing area.

One man of a 15-man shift at block machine and off-bearer that helps produce the 5,100 units every 9 hours.



This view shows action of a skip-hoist which dumps material into a steel hopper located above the machine.

Armed Forces of U. S. Employ Concrete in Wide Variety of Building Projects

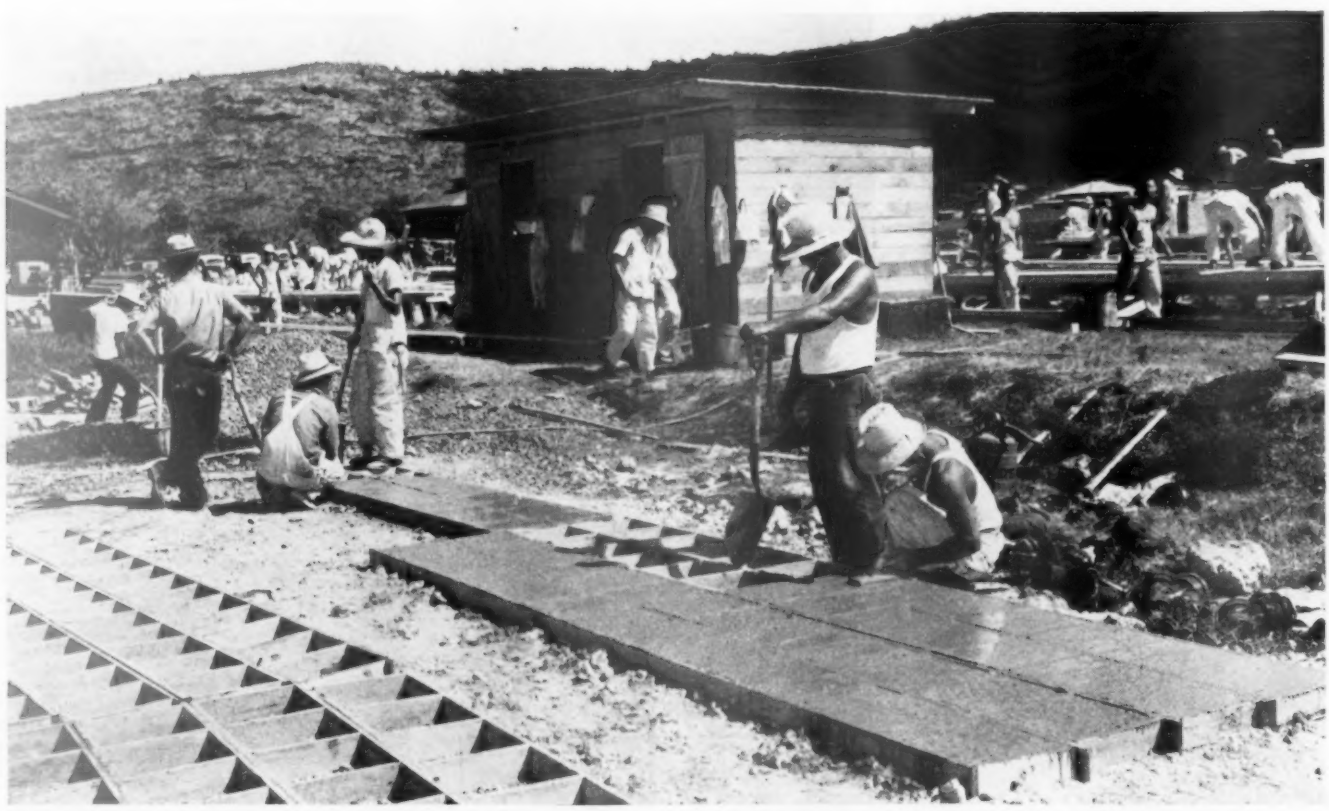
Navy Model Testing Basin

• Newest addition to testing facilities at the Navy's Davis W. Taylor Model Basin at Carderock, Missouri, is this wind tunnel building. The unit in the foreground —for offices and shops—is structural concrete faced with 2½-inch precast exposed aggregate concrete panels. The testing room to the rear is of cast-in-place architectural concrete, formed against plywood and painted to match the panel walls. The new building is located apart from the existing buildings but close enough to utilize the facilities of the entire Model Basin establishment. Note how the tunnels enter the testing room where the actual testing work is carried on.

Navy Medical Center

• Left—Main building of New Navy Medical Center. The exterior wall is of 2-inch exposed aggregate cast stone with masonry back-up. The entire group of buildings was designed by the Bureau of Yards and Docks. Right—This view shows a few of the thirty-four dwellings which will provide modern low-rental war housing. The walls are of concrete masonry, the floors of wood. Portland cement paint was used on the entire project.

200 Family Units



Men making cement blocks to be used for the support of foundations for barracks, in Hawaii, 1942.

Birmingham (from page 111)

best managed plants, a dry batch comes through from the mixer, the material is returned for correction; in the same manner, reject or imperfect blocks are dropped immediately into the pit without loss of either time or material.

A new Besser offbearer with a Curtis pneumatic hoist transfers the blocks from the machine to 20-pallet steel racks, which are moved into the curing rooms by a Towmotor 2½-ton fork truck. There are 8 rooms measuring 7-feet wide by 7-feet high by 32-feet in length; each room will hold 9 racks. They are built of 8- by 8- by 16-inch slag blocks with poured concrete floor and roof slabs. As each room is filled its counter-weighted steel door is closed and 125-pound saturated steam is introduced through a perforated pipe running down the center of the floor. The steam is supplied by a 100-horsepower hand-coal-fired boiler located in a separate building adjoining the block plant.

The yard in front of the plant is paved for a width of 104-feet and a depth of 200-feet with an 8-inch concrete slab, providing storage space for about 1,000,000 blocks. The loading platform will take care of 5 standard railroad cars with ease, and the cars can be shifted readily by means of a single-drum endless cable car spotter.

The plant uses Duroplastic cement almost exclusively, in a 1 to 6.7 mix with water running slightly over 5 gallons per sack. The output of the plant averages about 450 standard blocks per hour, and two 8-hour shifts are being maintained on a 6-day week. Ten men are employed on each shift.

The Alabama City plant has been producing large numbers of special, solid ballast blocks for the Navy. These consist of 6- by 8- by 16-inch and 4- by 8- by 16-inch solid units weighing 200 pounds per cubic foot, and are handled in the same manner as regular masonry units. The standard size masonry unit using slag aggregate weighs 33 pounds and tests from 1,200 to 1,500 p.s.i. at 14 days. Some Superock is being used, and this produces a standard unit weighing only 20½ pounds.

The Ensley plant is located near the company's slag and ready-mixed-concrete plants on the property of the Tennessee Coal, Iron & Railroad Company from whose pits the slag aggregate is obtained. At the block plant the sized slag is discharged from railroad cars into a hopper from which a belt-conveyor and bucket-elevator discharge it into a 140-cubic yard, 4-compartment bin. Minus-¼-inch slag is ordinarily used, but minus-¾-inch is sometimes called for, in which case an extra-fine size is also stored for blending purposes.

The fourth compartment of the bin is used for cement which is unloaded from bulk cars to a screw-conveyor. The same bucket-elevator is used to carry the cement to storage.

A stationary weighing batcher, equipped with beam scales, measures the cement and slag into the 50-cubic foot Besser mixer on the floor above the block machine. The water is measured by a meter. The Besser Super Vibrapac block machine has all the usual automatic features. A Besser pneumatic offbearer is used to load the block on 60-block racks which are carried into the curing rooms by a 5,000-pound Clark gasoline lift truck. The four curing rooms have a capacity of 1,500 blocks each. Steam is used for curing the year around and is

7½ MILLION CUBIC YARDS OF TOUGH OVERBURDEN "NON-STOP"

25-CUBIC-YARD PAGE *Automatic* AT WORK

The first 25-cubic-yard dragline bucket is a Page Automatic owned by the Northern Illinois Coal Corporation. It is shown at work, and below after its non-stop run of 7½ million cubic yards when it was sent to the yard for its first reconditioning.

SAME PAGE AUTOMATIC AFTER 7½ MILLION CUBIC YARDS OF STRENUOUS WORKOUT

PAGE ENGINEERING COMPANY · CHICAGO 38, ILLINOIS

supplied by a low-pressure boiler. After curing overnight the blocks are removed to the storage yard by the same lift truck. There is sufficient space for the storage of 350,000 standard blocks but the urgent demand in recent years has kept the stock considerably below that figure.

Sills and lintels are now being made in the customary way on a special vibrating table with individual molds. Some joists are also being made, mostly in rectangular cross-sections, in lengths up to 26 feet and depths up to 12 inches. A job-type mixer is used to provide wet concrete mixture for these products.

The Stockbridge plant is located near the crushed-granite plant, which supplies it with minus-¼-inch aggregate—Grade B in the Georgia state specifications — and granite sand. These materials are discharged from trucks into a 20-cubic yard hopper from which a belt-conveyor feeds them into the 40-cubic foot Besser mixer. The cement is added from sacks. A skip carries the concrete to the top of the Besser Super Vibrapac block machine which, like the others, has all the usual features including the pneumatic off-bearer.

The finished blocks are loaded on racks of 48-block capacity and are steam-cured in six curing rooms with a total capacity of 6,500 standard blocks. The outdoor storage yard has concrete walkways. A low-level sidetrack which puts the box car floors at yard level facilitates the loading of cars.

A 25-horsepower stoker-fired boiler supplies the steam for curing. The air is furnished by a Gardner-Denver 785A tank-mounted compressor. Gates V-belts are used on all the drives.

These three plants all come under the general supervision of C. A. Barinowski, sales manager of the Birmingham Slag Company. E. A. Lloyd is in charge of operations and sales at Ensley and D. T. Mann is district manager of the company's Gadsden operations. The plant superintendents are: A. R. Bright at Ensley; H. O. Moore at Alabama City; W. J. Shaw at Stockbridge.

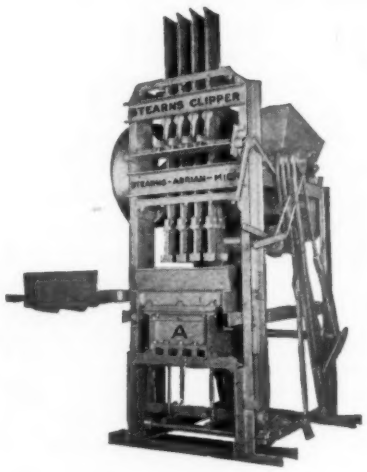
Airox *(from page 108)*

bin. The same 7-cubic yard trucks used in the quarry transport much of the finished product to a siding on the Southern Pacific Railroad about 2 miles distant.

The plant has a capacity of 30 cubic yards of finished aggregate per hour but is usually operated at about 70 per cent. of its capacity. If the experiments with the low-oil-content raw material indicate that the quality of the finished aggregate can be maintained by using such stone, both kilns will be used to gasify the carbonaceous material and fuse the surface of the pellets in one operation, thereby greatly increasing the capacity of the plant. A feed tank for the second kiln and a belt-conveyor from the above-mentioned elevator have already been installed for this purpose.

Government specifications are extremely rigid, rejecting aggregate that weighs more than 41 pounds and less than 40 pounds per cubic foot. The company has been able to comply with these requirements to a high degree, however, and little material has been turned out that is not acceptable. Tests are run constantly in the plant laboratory to see that the required quality is always maintained and that specifications are complied with to the letter.

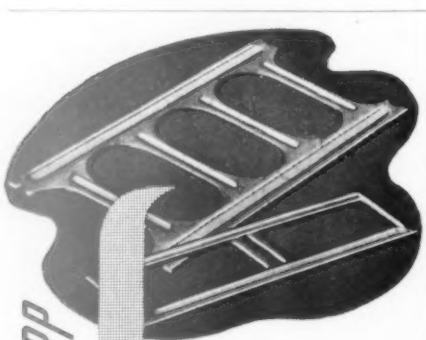
After the war the company expects to find a ready market for its product among western concrete-products plants and for a wide variety of construction and insulation purposes.



The Clipper Stripper, shown above, available in 5 models, is only one of the popular machines in the ANCHOR Line of Complete Equipment for the Concrete Products Plant. ANCHOR Engineering Service in the design of new plants or revamping older operations is nationally famous. Consult us before you buy equipment or modernize your plant . . . it costs no more.

Hobbs block machines, Anchor tampers, Anchor, Jr. strippers, Stearns power strippers and Jolterete, Stearns mixers and pallets, Straublox oscillating attachments, etc. Repair parts for: Anchor, Ideal, Universal Stearns, Blystone mixers and many others.

ANCHOR CONCRETE MACHINERY CO
G. M. Friel, Manager — Columbus, Ohio



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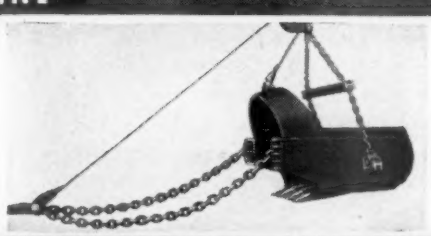

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Waco Plant Offsets Slump in Concrete Pipe Sales By Manufacturing Blocks

another ON THE SPOT report

WHEN the vast war construction program came to an end recently and the production of construction materials dropped temporarily to a low level most producers of concrete pipe sat back for a well-earned rest before the anticipated heavy post-war demands. One exception was H. Eschenbrenner, president of the Universal Concrete Pipe Company, one of the largest producers in this country. This company had built a plant in Waco, Texas, late in 1941 to supply the growing demand in this area. In August, 1943, just as this demand began to fall off, a concrete block machine was installed in this plant in order to keep both it and the plant crew busy.

This proved to be a wise move as a considerable demand developed for blocks for the construction of hospitals, of buildings on some of the air bases and army camps for which pipe had been supplied, and for foundations and walls for homes and other private building construction. The block sales now equal the sales of pipes which are shipped largely from the yard storage which was built up after the peak demand was over. The manufacture of pipes was carried on 2 shifts daily most of the time up to July, 1943. Now a single shift alternates between block and pipe production as the demand necessitates.

The blocks are made on a Stearns Model P41 tamper-type machine which is supplied with concrete from a floor-level Anchor 1-sack mixer by a skip. Most of the output consists of standard 8- by 8- by 16-inch units. Racks of original design are used which holds 3 tiers of 16 blocks each, one on the skid bottom of the rack. Barrett-Cravens jack-lifts are used to move these racks into the curing room and from it to yard storage.

Waco plant and part of pipe storage yard.

The two concrete pipe machines in this plant are Universal double-tamper units. One is used to make only small sizes of pipe and the other sizes up to 60 inches. Both have skips which supply them with concrete from individual 21-cubic foot Stearns mixers at floor level. The three mixers are supplied with cement from sacks and sand and gravel from barrows.

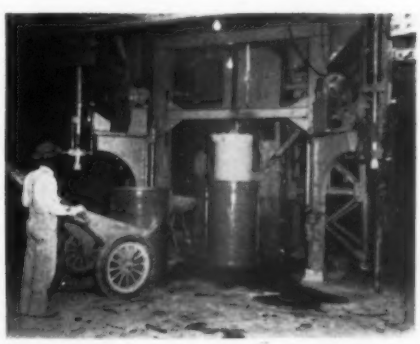
Regular 2-wheel carryoff carts are used to carry the pipes to the same curing room and thence to yard storage. The 60- by 100-foot curing room is equipped with water sprays and 6 projection heaters suspended from the ceiling. During the warm months only the sprays are used and in cold weather they are used in combination with heaters. The steam for the heaters is supplied by a 30-hp. locomotive-type, gas-fired boiler.

The wire-cage reinforcing for the pipes is rolled in the plant and welded with a Thomson-Gibbs spot welder. A Lincoln arc welder is used for repair and maintenance work. There is also an acetylene welding generator and the gas and oxygen pipe lines have connections at each of the three machines so that hoses can be quickly connected for any necessary work.

The stored blocks are loaded into trucks by hand for shipment. There is a truck with a winch and boom attachment of original design which is used to load the larger pipes on trucks.

Concrete blocks being hauled to curing room.

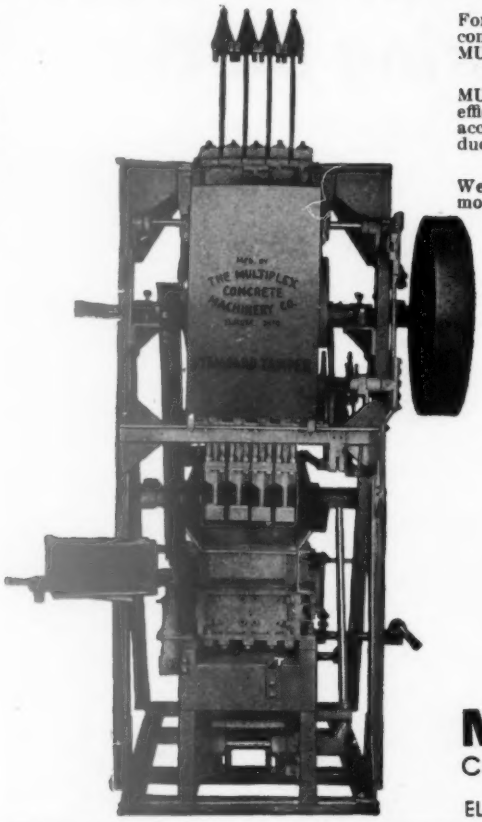
The block machine with wooden skid rack at right.



One of the two double-tamper pipe machines.

The CONCRETE MANUFACTURER

MULTIPLEX Machines For Postwar Profits



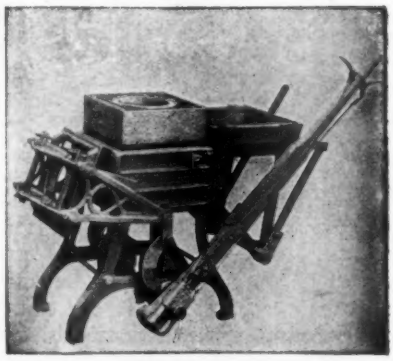
For a Quick "Take-Off" and sustained pace in concrete block output, reserve one of the MULTIPLEX *high-speed* machines.

MULTIPLEX offers a wide variety of super-efficient mixing equipment, with all types of accessories necessary for economical mass production.

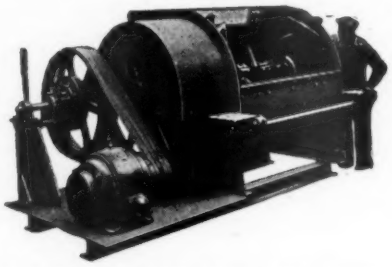
We can recommend MULTIPLEX units for modernizing *your* plant and enlarging its capacity.

Our universal type MULTIPLEX Standard Tamper for making plain and stripper, or face blocks, on one base. Easily convertible as business expands. Supplied with 4-bar or 8-bar tamper, either power or hand operated.

Write for Booklet describing the MULTIPLEX complete line of concrete mixing equipment, including Double and Single Hand Press Strippers, Power Press Strippers, and Super-Tampers.



The MULTIPLEX Flue Block Machine makes ventilated, solid or lightweight units, including all attachments for ventilator and stove pipe openings.



MULTIPLEX Multi-Mixer with reverse screw-type action insures fast and thorough mixing of every batch. Side, end or bottom discharge.

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Frank Muenzer, President
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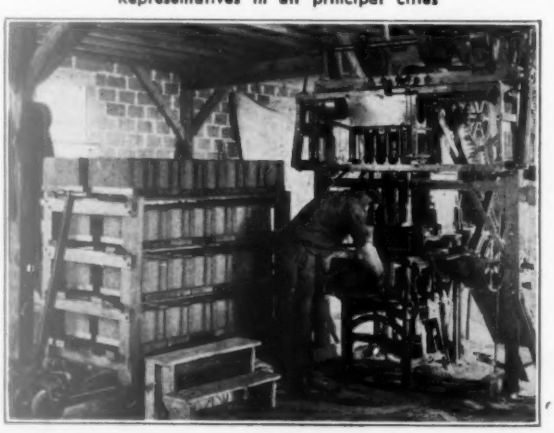

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For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for any diameter pipe from 12 to 84 inches—tongue and groove or bell-end pipe at lowest cost.

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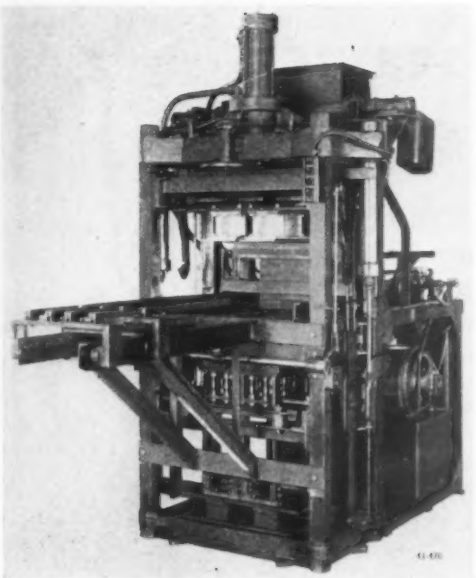
KENT Vibra Press high capacity block machine for medium and large plants.



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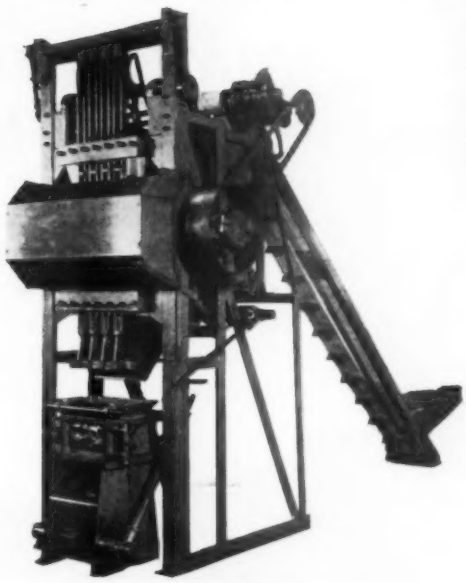

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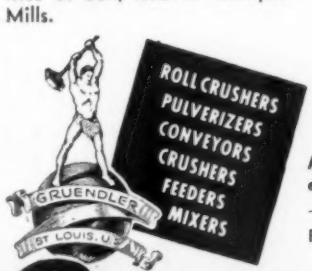

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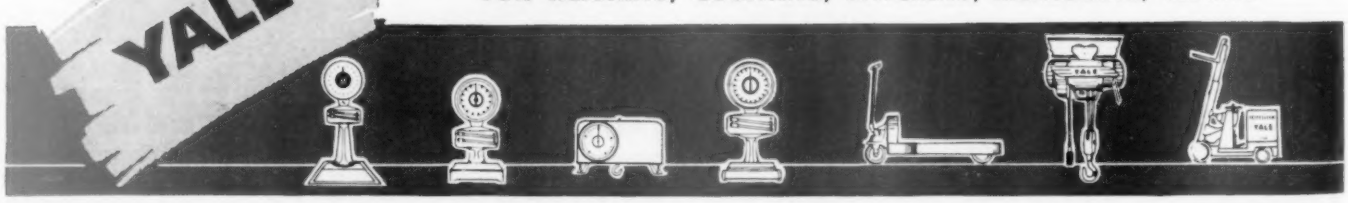
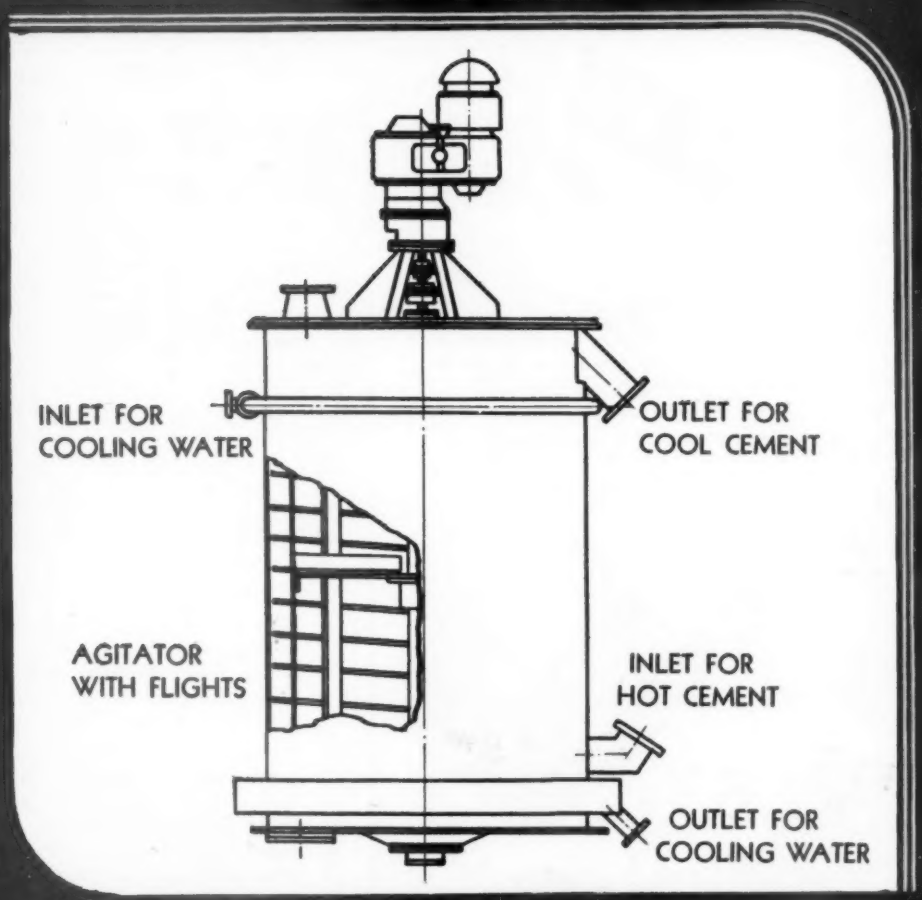


MATERIALS HANDLING MACHINERY: TRUCKS—HAND-LIFT AND ELECTRIC . HOISTS—HAND AND ELECTRIC

FOR COOLING HOT CEMENT



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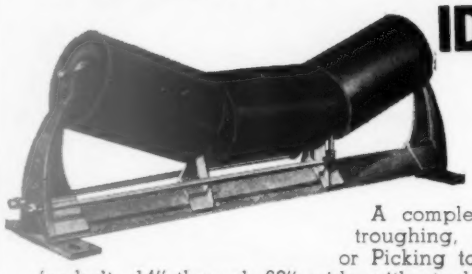

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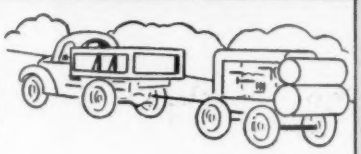

MOST COMPRESSOR JOBS ARE SMALL

But most construction compressed air jobs are small —and can be done FASTER, MORE ECONOMICALLY, WITH LESS MANPOWER by taking advantage of the MOBILITY of the DAVEY AUTO-AIR COMPRESSOR.

The Davey AUTO-AIR is mounted on the truck, and will go anywhere as fast as the truck can go. At the same time, because the AUTO-AIR occupies less than one-third of the body space, the same truck can carry the men, tools and materials to do the job.

Power for the compressor is taken direct from the truck engine through the Davey Power-Take-Off. Use of one engine reduces "first" cost, lowers operating and maintenance costs—provides more air-per-dollar-invested over a long period of years. This time-proved, heavy-duty compressor can be mounted on most trucks—whether new or already in use—and can be readily changed from one truck to another.

Available in 60, 105, 160, 210 and 315 cfm capacities

EVERY CONTRACTOR CAN USE AT LEAST ONE DAVEY AUTO-AIR COMPRESSOR TO GET *MORE JOBS DONE PER DAY . . . FASTER, CHEAPER*

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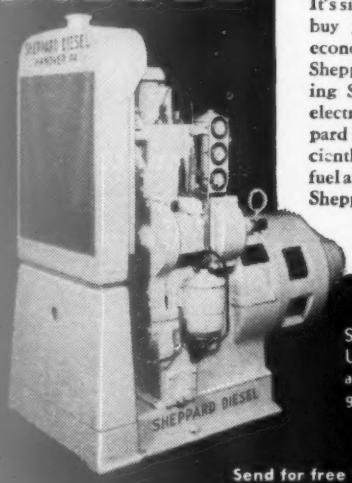

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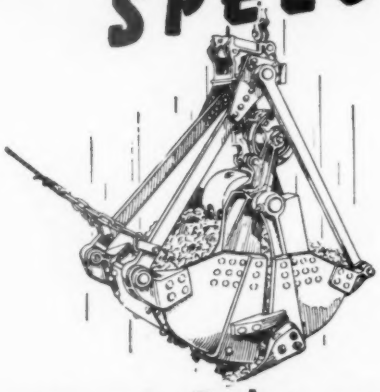

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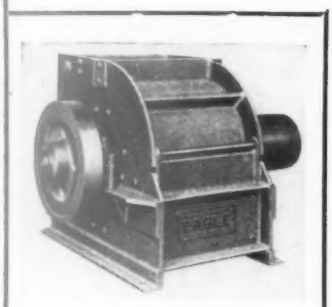

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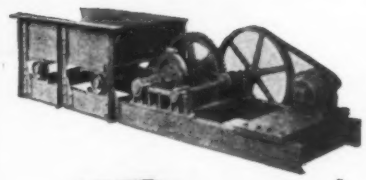

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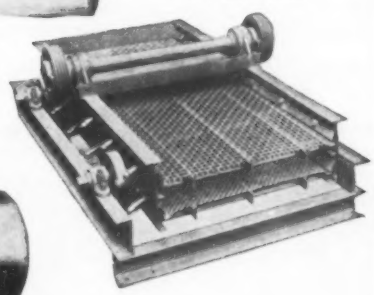

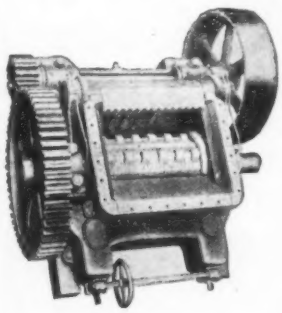

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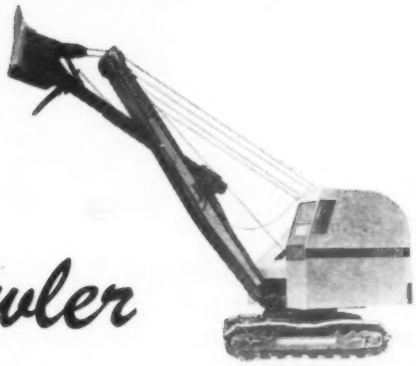

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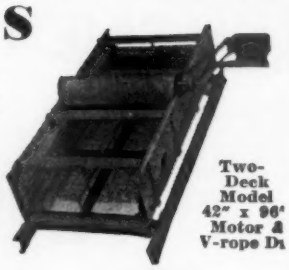

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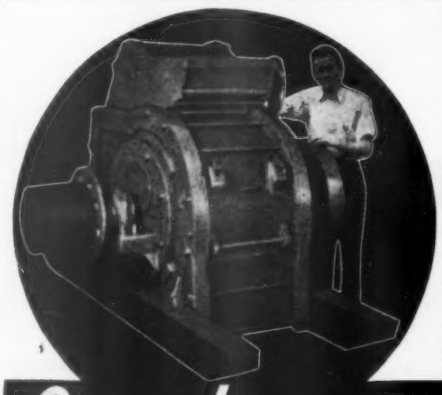

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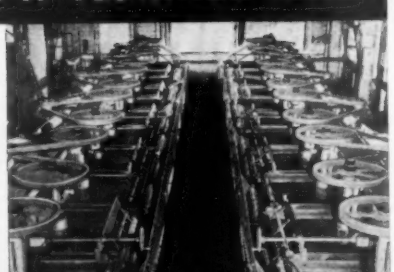

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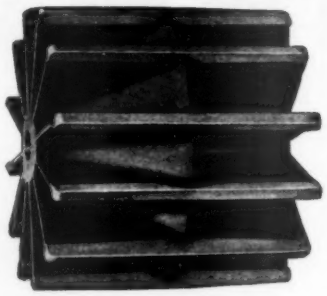

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Rows of heavy, free swinging, fast revolving hammers, crush the material by impact until of proper size to pass through the grates. By reducing large rock to 1¼", ¾" or agricultural size in one operation, the "Slugger" has enabled operators to produce these sizes at a very low cost per ton and with small investment. Seven sizes—6 to 150 tons hourly capacity.

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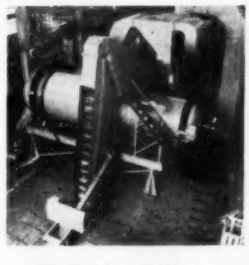

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to insure complete
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MAXIMUM ECONOMY--TIME AND MONEY

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2—Std. gauge, 25 ton Browning, shop overhauled.

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1—3′ Symons with coarse bowl
1—5½′ Symons with coarse bowl.
1—Traylor, bell head, 10″ feed opening.

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2—Komarek-Greaves 32″ dia. x 24″ face, rated 25 t.p.h. with extra shafts and rolls.

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3—5′x40′, 5′x48′, 6′x50′, all made by Vulcan Iron Works. Equipped with firing hoods, complete.
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1—8′x135′ Allis-Chalmers, with 6x40′ rotary cooler.

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1—5′x30′ Cummer, mounted on steel I-beam frame, with furnace, etc.
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2—4′x6x16″ and 6′x22″, iron lined.
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2—8′x30″ silex lined, belt driven.

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2—Dorr Combination Bowl & Rake Classifiers, 10′ dia. with 2′3″x19′8″ rake and 12′ dia. with 2′3″x21′4″ rake.

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1—4 roll High Side, with air classifier, Raymond exhauster, cyclone collector and inter-connecting piping.
1—4 roll High Side, equipped with whizzer air classifier, Raymond exhauster, cyclone collector connecting piping, etc.

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1—30″x24′ long, heavy steel frame, semi-portable.
1—30″x120′ c/c, Rex-Stearns anti-friction idlers; steel frame.
1—30″ approx. 500′ c/c with Jeffrey anti-friction idlers, gear reducer, motor, take-up, etc.
2—Belt Feeders, steel frames, 24″x6′.
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2—Portable Belt Conveyors, 16″x25′; 16″x35′, electric motor driven.

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8—Tyler Hummer, 3′x5′, 4x5′; one and two decks; also spare V-32 vibrators.
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1—3′x8′ Allis-Chalmers, 3-deck, UNUSED.
1—4′x8′ Huron, 1-deck.
1—4′x12′ Symons, 2-deck.

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1—1 yd. P. & H. Shovel, gasoline, fitted with new crawler treads.
1—Marion 37 electric, 1¾ yd., with Ward-Leonard control.

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PRICED RIGHT

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2—Bucket Elevators, 20′ to 75′.
8—Belt Conveyors, 20′ to 50′.
5—Tyler Screens, 3′x5′, 4′x5′.
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Buchanan Type B 12″ x 36″ Jaw Crusher.
Allis-Chalmers Double Roll Crusher, Garfield Type, size 54″ x 20″, with new manganese roll shells.
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Lippman Scrubber Screen, 72″ x 18′, complete with G. E. 20 HP motor, 440 volt with starter.
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Marion Type 450 Electric Shovel, crawler mounted, 22′ boom, 1¼ yard bucket, equipped for 440 volt current.

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Crushing Rolls—16″x10″ up to 54″x24″.
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2 heavy, C. I. pulleys, 84″ x 23″.
New Dryers built for all purposes.

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3 Portable belt conveyors with good belting, one 18″ x 28′, one 24″ x 30′, one 24″ x 24′.
1 Telsmith feeder.
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1 6″ Hydraulic Dredge, with 6″ Morris Type "K" Manganese Pump, like new. Also equipped with service pump; hoist for suction line; 500 feet of 6″ pipe; assorted 6″ fittings including enclosed flap valve and hand hole fitting; pontoons — 4 lengths 6″ hose. Mounted on 10 x 20 wooden barge in excellent condition.
1 30″ Universal sand drag.

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PORTABLE TRUCK LOADERS • PORTABLE CONVEYORS

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50 Skips and Battleship Type, 2 to 6 Yds.
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12 Ton KOEHRING 45 Ft. Boom Gas.
16 Ton Speedcrane, Gas, 50 Ft. Boom.
25 Ton BROWNING & 30 Ton AMERICAN Locomotive.
25 Ton LINK BELT K-48 Electric, 70 Ft. Boom.
2 Yd. Monighan Electric 60 ft. Boom Dragline.
3 Yd. Monighan Diesel Dragline.
5 Yd. Monighan Diesel Dragline.

CATERPILLAR SHOVELS
½ Yd. P. & H. Gas & ¾ Yd. Insley Gas.
¾ Yd. KOEHRING Gasoline.
¾ Yd., 1¼ Yd., 2 Yd., 4 Yd. & 8 Yd. MARION Electrics.
1 Yd. NORTHWEST Gas & 7/8B2 Steamer.
1½ Yd. BUCYRUS 41B Steamer.
1½ Yd. KOEHRING 601—Gas.
4 Yd. 120B Bucyrus Elec.

DUMP CARS
46—KOPPEL, 1½ Yd., 24 & 30 In. Ga., V Shaped.
15—2 Yd., 3 Yd., 4 Yd. 36 In. Ga.
20—Std. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.

BALL, ROD AND TUBE MILLS
6x8 Continuous Pebble Mill.
5x5 Batch Mill.
5'x22" HARDINGE CONICAL Dry Ball Mill.
6'x22" HARDINGE CONICAL Pebble Mill.
4x8, 8x6, & 10x9 Straight Ball Mills.
8'x22" HARDINGE CONICAL Ball or Pebble Mill.
4x16, 5x18, 5x22, & 6x22 Tube Mills.
3½x8 & 5x7 Air Swept Tube Mills.
2x4½, 5x12 and 6x12 ROD MILLS.
4x16 Smidth Tube Mill Silex.
5½x20 Smidth Tube Mill Mang. Lining.
5½x18 P & M Tube Mill Silex.

PULVERIZERS
No. 1 Sturtevant Ring Roll.
RAYMOND Auto, Pulverizer No. 0000, 0 & 8.
RAYMOND Imp Mills No. 4, 32 & 55.
GRUENDLER XXB Mill & Jay Bee No. 3 & 4.
RAYMOND 4 & 5 ROLL MILLS & 5 Ft. Chaser Mill.

SEPARATORS AND COLLECTORS
14 ft., 8 ft. and 12 ft. Separators

ROLL CRUSHERS
36x60 Fairmont Single Roll.
36x20 Diamond Double Roll.
24x24 & 36x16 & 36x20 Diamond Double Roll.

JAW CRUSHERS
10x8, 13x7½, 14x7, 15x9, 15x10, 16x9, 16x12, 16x10, 18x11, 20x8, 20x6, 20x10, 20x12, 20x11, 26x12, 30x15, 30x13, 36x30, 36x18, 36x14, 36x15, 36x9, 36x6, 38x18, 36x10, 36x24, 42x9, 48x36, 60x42, 84x66, 36x16, 9x36.
30x10 Gruendler Roller Bearing.

CONE & GYRATORY CRUSHERS
18 in., 24 in., 30 in., 36 in. and 48 in. Symons Disc.
21K & 18N Allis Chalmers.
4—10 TZ Traylor 4 Ft. Gyratory.
4—Nos. 5, 3 & 6 Austin Gyratory.
2—Traylor T-12 Bulldog Gyratory.
8 in. Traylor T. Gyratory, Telsmith No. 9.
17 Gates K—Nos. 3, 4, 5, 6, 7½, 8 & 9½.
10 Inch Austin Model 105.
6, 10 & 13 Inch Superior McCullys.
KENNEDY: Nos. 19, 25, 27, 39 & 49.
16" Traylor.
7 Ft., 5 Ft., 4 Ft., 3 Ft. and 2 Ft. Symons Cone.

MIXERS—PAVERS
5—1 yd. 2 yd. & 3 yd. Mixers.
3—Ransome & Rex 34E Dual Drum.
5—Koehring & Smith 27E Pavers.

HOISTING ENGINES
7 Gasoline 15, 40, 60 & 100 H.P.
17 Steam 7x10, 8¼x10 and 10x12.
8 Electric 20, 35, 50, 60, 100 & 150 H.P.

HAMMER MILLS
4 Jeffreys: 24x18-A, 36x24-B, 42x36-E & 42x48-B.
Williams No. 1 Jumbo Jr., & No. 6 Universal.
Nos. 4, 6 & 8 Williams Jumbo.
No. 36 Am. Ring Roll.
Greundler No. 6X.

ASPHALT EQUIPMENT
7—750 & 1000 Gal. Distributor Trucks.
3—1000 Lb. & 2000 Lb. Pug Mixers.
6—3, 5, & 10 Ton Asphalt Rollers.
5—½, 1, & 2 Ton Asphalt Plants.

DIESEL ENGINES
60 HP Fairbanks Morse.
140 HP Fairbanks Morse.
200 HP Atlas.
225 HP Chicago Pneumatic

DIESEL GENERATORS
343 K.W. F.M. 3/60/480 v.
240 K.W. F.M. 3/60/2300 v.
300 K.W. Worthington 3/60/2400 v.
125 K.W. F.M. 250 v. D.C.
30 K.W. Buda 110 v.

RAYMOND MILL
5 Roll High Side.

CONVEYOR PARTS
BELT: 1000 Ft. 60 In., 700 Ft. 42 In., 600 Ft. 36 In., 800 Ft. 30 In., 1642 Ft. 24 In., 517 Ft. 20 In., 297 Ft. 18 In., 1000 Ft. 14 In. & 16 In.
IDLERS: 36 In., 30 In., 24 In., 20 In., 18 In.
Head & Tail—Pulleys—Takeup for all sizes.
Steel Frames: 2,000 Ft. 24 In., 30 In. & 36 In. Sections.

ROTARY DRYERS AND KILNS
36 In. x 20 Ft., 3 Ft. x 30 Ft., 4 Ft. x 30 Ft., 54 In. x 30 Ft., 42 In. x 24 Ft., 5 Ft. x 30 Ft., 5 Ft. x 16 Ft., 5 Ft. x 60 Ft., 6 Ft. x 60 Ft., 6 Ft. x 70 Ft., 70 In. x 40 Ft., 5x30 & 8x84 Double Shell Dryers, 8x110, 7½x100, 8x125 & 10x20 Kilns.

STEEL DERRICKS
GUY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom, 25 Ton 100 Ft. Boom, 75 Ton 135 Ft. Boom.

LOCOMOTIVES
DIESEL: 7—41½, 8 and 15 Ton.
GASOLINE: 3 Ton, 5 Ton, 8 Ton, 12, 14 & 30 Ton.
STEAM: 9 Ton, 20 Ton, 40 Ton, 60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 17 Ton & 40 Ton.

SCREENS
VIBRATING: 2x4, 3x6, 2x8, 3x8, 3x5, 4x5, 4x8, 4x10, 48x72. HUMMER, ROTEX, NIAGARA & ROBINS. LINK BELT & HURON.
REVOLVING: 3x12, 3x16, 3½x18, 3x24, 4x16, 4x20, 4x23, 4x24, 5x30, 5x20, 6x20.

STEEL STORAGE TANKS
35—4000, 5000, 6000, 8000, 10000, 15000 and 20000 gal. cap. Horizontal and Vertical.
6—2500, 5000 and 10000 bbl. Vertical.

ASPHALT TANKS
15—8000, 10000 and 20000 gal. cap. with heater coils.

RAILROAD CARS
20—8000 gal. cap. Tank Cars.
12—50 Ton Cap. Battleship Gondolas.
7—50 Ton Cap. Flat Cars.

SAUERMAN DRAG AND SLACKLINES
1—¾ yd. Gas 1—1½ yd. Electric
1—1 yd. Electric 3—2 yd. 3 yd. & 4 yd. Electric

R. R. TRACK SCALE
125 Ton 56' x 10'6" Platform 4 Section.

WHIRLEY CRANES
5 Clyde 75 to 100 Ft. Boom.

DRILL SHARPENERS
5 I.R. 4K Shank Grinders.
6 Ingersoll-Rand 54, 40, 50 & 34's.
7 Sullivan Class A. & C.
8 Gardner-Denver 3A & No. 6DS.

MINE LOADERS
5 Eimco, GD, & Conway.

(Cable Address: "STANEQUIP" New York)
Lincoln Bldg., 60 E. 42nd St., New York, N. Y.
Murray Hill 2-3075 or 2-3076

R. C. STANHOPE, INC.

CRUSHER—JAW
1—Traylor 36 x 42 with or without Pan Feeder.

CRUSHER—REDUCTION
1—Traylor 4 ft., type TY.

DIESEL MOTORS
2—Cumming 200 H.P., supercharged Diesel Motors for use in Euclid and other similar heavy trucks.

PAN FEEDER & CONVEYOR
1—Pan Feeder 48 x 10 ft.
1—Pan Conveyor 24 x 65 ft.

HAMMER MILL
1—Dixie Mogul Breaker Plate type, size 5021, hopper opening 24 x 24.

LOCOMOTIVES
1—Lima 80 ton, 6 wheel, Switcher with piston valve, with tender, superheater, code boiler, 200 lbs. pressure, electric lights, Walschaert valve motion, automatic lubrication; thoroughly modern, excellent condition, immediate delivery. For sale or rent.
1—Baldwin and 1—American, 6 wheel, Switchers with tenders, 70 and 80 tons capacity, ASME code boilers.
1—35 ton and 1—25 ton, gas, standard gauge, air brakes, thoroughly modern.
1—Milwaukee 12 ton, gas, standard gauge.

MINE HOIST
1—Allis Chalmers, single drum, 600 H.P., A.C., 2300 volts, drum 96" x 118" face, 2550 ft. 2⅛" rope, operating in balance, with all modern safety features.

PUMPS
4—Two stage centrifugal, high speed, ball bearing, direct to 850 H.P., 2200 volt, 3 phase, 60 cycle, cap. 1070 GPM @ 1000 ft, with across-the-line starters.

VIBRATOR SCREEN
1—Traylor FB-4 size 47" x 84" with generator.

SHOVELS & DRAGLINE
1—Marion 4 yd. Electric, model 4160, full revolving, crawler tread, Ward Leonard control equipment, late type crawlers; perfect condition. Located in Minnesota.
1—4 yd. Electric Shovel with 3 yd. dragline equipment, Ward Leonard control, 100' boom.

TRUCKS
4—Euclid 18FD, end dump, 15 tons capacity, 200 H.P. Cummins supercharged diesel motors; guaranteed condition.

LOG TYPE STONE WASHER
1—Allis Chalmers 25', heavy duty, hutch type, Log Washer, with steel tank, ⅜" plate, with two logs with paddles, 35" dia.

WELL DRILL
1—Armstrong 29-T electric, crawler mounted, 220/440 volt, complete with cable tools, etc.

JAW CRUSHERS, GYRATORY CRUSHERS, ROLL CRUSHERS, DRYERS & KILNS, HOISTS, CARS, CRANES, SHOVELS, ETC.

WE WILL BUY ANY MODERN PIECE OF EQUIPMENT ANYWHERE

A. J. O'NEILL

Lansdowne Theatre Building
LANSDOWNE, PA.
Phila. Phone: Madison 8300

FOR SALE

2—2' Symons Cone Reduction Crushers.
2—3' Symons Cone Reduction Crushers.
2—4' Symons Cone Reduction Crushers.
1—5½' Symons Cone Reduction Crusher.
1—7' Symons Cone Reduction Crusher.
6" x 6" Air Compressor complete with 15 H. P. 220 V. 3 ph. 60 cy. motor.
5—30 to 100 Ton Steel Guy Derricks.
10—Overhead Electric Traveling Cranes.
2—4 ton floor controlled 220/3/60—46' span cranes.

National Equipment Company

400 West First Street
Phone 4361 Bloomington, Indiana

Need any used items?
Have any for sale?

Int. Diesel TD-14 Tractor with Bulldozer and double drum winch.
45 ft. Crane Boom. Also Pull shovel attachment for Lorain 75A or 75B.
1¼ Yd. Byers Gas Shovel.
1 Yd. B-Erie Gas-Air Shovel.
20 KW and 30 KW. Int. & Cat. diesel electric sets.
1 Yd. Link Belt K-30 gas shovel.
14 ton Whitcomb Loco-Gas—36 Ga.
20 ton Plymouth Loco-Gas—Std. Ga.
27—E. Smith Paver, Model H-31.
5—Electric Hoists, 40, 50 and 60 HP.
1 Yd. Round Shaft Buckets.
1 Yd. and ½ Yd. Dump Buckets.
2—Shovel Attach. for Byers Bearcat, Jr.
Shovel Attachment for 41B Bucyrus-Erie.

J. T. WALSH
Brisbane Building Buffalo 3, N. Y.

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36 x 42" Traylor Jaw Crusher, with motor.
24 x 36" Farrel Jaw Crusher.
14 x 36" Cedar Rapids Jaw Crusher
Allis Chalmers No. 6, 7½, 8L Gyratory Crushers.
Kennedy 38-S Gyratory Crusher.
Austin No. 107 Gyratory Crusher.
18 x 24" McLanahan Single roll Crusher.
36 x 60" Fairmount single roll Crusher.
2, 3 & 4' Symons Cone Crushers.
Williams 4 roll Mill.
Barber Greene Bucket Loaders 42-62.
1½ & 2 yard Brooks Load Luggers.
Belt Conveyors 14" x 40', 14" x 190'.
½ yard Bay City Gas Crawler Crane-Dragline.
2 yard Page Walker Dragline 60' boom, Diesel.
Diesel, Natural Gas, Steam Engines.
Locomotives, Cars, Compressors, etc.

MID-CONTINENT EQUIPMENT COMPANY
710 Eastgate Pa. 2290 St. Louis 5, Mo.

SHENANDOAH LIMESTONE PLANT FOR SALE

CONSISTS OF 17.28 ACRES OF LIMESTONE ROCK, 4 KILNS WITH ESTIMATED CAPACITY OF 40 TONS PER DAY. EQUIPPED WITH A STEAM BOILER WITH SHED HOUSING, STEAM HOIST, LIME LOADER & SCALES. PLANT LOCATED IN HEART OF LIME PRODUCING TERRITORY OF SHENANDOAH VALLEY OF VIRGINIA AT STRASBURG JUNCTION. HAS SPUR TRACK WITH SWITCHING FACILITIES FURNISHED BY BOTH THE SOUTHERN, & THE BALTIMORE & OHIO RAILROADS. OFFICE BUILDING ON GROUND CONVENIENTLY LOCATED TO PLANT PROPER. EXCELLENT INVESTMENT OPPORTUNITY.

Inquire Box 109, c/o Pit & Quarry
538 South Clark Street Chicago 5, Illinois

2—No. 200 Rex double pumpcretes, excellent condition, with Waukesha 6-cylinder gas engines complete with pugmill remixers and 1,200 ft. 8" pipe.

2—30B Diesel driven caterpillar cranes with dragline and shovel attachments.

1—No. 480 Marion steam crawler crane without attachments.

1—Complete I-R No. 54 drill steel sharpener with one 27F oil furnace, one JF furnace, one shank and bit punch, cut-off machine, etc., etc., in guaranteed condition.

1—5 Cubic yard Owen clamshell bucket—weight 27,000 lbs.

GREAT LAKES DREDGE & DOCK CO.
122 So. Michigan Ave., Chicago 3, Ill.

CRUSHER — ELEVATORS — SCREENS — CONVEYORS

1—RELIANCE 8" x 14" Portable Jaw Crusher
1—New 9" x 15" BEAUMONT Jaw Crusher
2—Used 9" x 15" CHAMPION Jaw Crushers
1—10" x 20" CHAMPION Jaw Crusher
1—12" x 20" BUCHANAN Jaw Crusher
3—12" x 26" CHAMPION Jaw Crushers
1—#1030 CHAMPION Roller Bearing Crusher
1—4½" TRAYLOR Gyratory Crusher
1—22F TELSMITH Gyratory Crusher
2—NEW Small Hammer Mills

JOHNSON & HOEHLER, INC.
Lansdowne, Pa.

BUCKET ELEVATORS & PARTS

Bucket elevators, 16", 18", 20" on chain or belt
50' elevator, 8" malleable buckets on belt
Continuous 14"x50' bucket elevator on chain
Continuous 14"x40' bucket elevator on belt
Continuous 30"x40' double strand bucket elev.
Grain elevators, 5" to 18" buckets on belt
Link-Belt chain barrel elevator, 25'
500 feet No. 730 Pindle chain
360 feet Oilwell roller chain XXS40
300 feet Jeffrey No. 1123 roller chain
150 feet L-B chain No. 847 with K2
300 feet L-B chain No. 825 with A-42
400 feet Ewarts malleable chain No. 124
Selected chain sprockets, new and used
New malleable elevator buckets, 20"x8"-AA

CRUSHERS, ROLLS, MILLS

Allis Chalmers 16"x42" double roll crusher
Buchanan "C" 14"x30" double roll crusher
Sturtevant Laboratory Rolls, 8"x5"
Acme 6"x21" type C jaw crusher, roller bearings
Buchanan 10"x16" Blake type jaw crusher
New England 11"x21" jaw crusher, cast steel frame
Traylor "BULLDOG" 11" gyratory crusher
Sturtevant No. 0 "ROTARY FINE CRUSHER"
Williams No. 2 hammermill
Midwest No. 2 hammermill
Robins double roll 24"x30" coal crusher
Single roll coal crusher, 24"x24"
Simplex coal pulverizer, roller bearings
Eight tons steel balls, 1" to 2".

STONE WORKING EQUIPMENT

2 Meyers stone saws, 48" and 60" dia. Electric
1 Lincoln open side electric planer, 42"x12'
2 Lincoln open side electric planers, 36"x12'
1 Patch 36"x12' open side belted planer

MISCELLANEOUS

Sauerman double drum 50 hp electric dragline hoist
National double drum 25 hp electric standard hoist
Chicago belted air compressor, 529CFM, NSB
N. Y. Air Brake No. 6B Duplex steam air compressor
Speed Reducers, worm drive, 50 to 1 and 70-1 ratio
Electric motors, 1 to 100 horse power
Morris 6" manganese lined sand pump
Ellicott 4" belted sand pump
4" centrifugal water pump with 25 hp motor
Two 6" centrifugal vertical water pumps, 15 hp
4 ton and 8 ton 36" gauge gasoline locomotives
20" and 24" flat cars
400 hp V-belt double pulleys with V belts
Waukesha 4 cyl. engine with speed reducer
3 steel pontoons 4'x4'x14'

CONVEYORS AND PARTS

Sandvik 24"x96" steel belt conveyor
Jeffrey Foundry mold conveyor, 42"x150'
Jeffrey Standard Steel Apron Feeder, 24"x27'
Steel plate conveyor, 47"x26'
Link Belt Single Flight conveyor, 15"x56'
Haiss Portable flat belt conveyor, 14"x24'
Belt idlers and conveyor belt
Belt conveyor pulleys, 12" to 42" belt
Belt trippers for 14", 16", 18" belt
Weller 36" horizontal automatic belt take up
Screw take ups, 12 feet center, 3-7/16" bearings
Screw and gravity conveyor
New and used conveyor belt

VIBRATING & REVOLVING SCREENS

3 "HUMMER" single deck 3'x5' vibrating screens
One "HUMMER" single deck 4'x5' vibrating screen
15 cycle generators for "HUMMER" screens
Robins "GYREX" double deck 4'x10' vibrating screen
Simplicity three deck 3'x6' vibrating screen
Deister "Plato-O" single deck 3'x7' vibrating screen
"JIGGER" three deck 2'x5' vibrating screen
Revolving screens: 4'x16', 4'x22', 5'x18'

G. A. UNVERZAGT & SONS
136 Colt Street — Irvington, N. J.

---

1. Rock Spreader, Jaeger Model AJS, adjustable 8 ft. to 11 ft.; very slightly used; two available.....each $395.00
2. Motor Grader, Diesel, Allis-Chalmers, Model AD, late type with General Motors diesel engine, tandem drive, 1942 model .....85% of list
3. Tractor and scraper, Allis-Chalmers HD14 with Garwood Model 515, cable controlled 15 yard scraper; late models; good condition ....Price on application
4. Diesel compressor, Worthington portable, size 315 ft. actual air with Hercules diesel engine, four steel wheels, two-stage, air-cooled; perfect condition; new in 1942.....$5185.00
5. Reduction Crusher, Traylor, Model TY, size 1'8", capacity up to 30 tons per hour; bargain.....$1500.00
6. Air Compressor, Leroi portable 210 ft. actual air; a first-class machine; bargain $1500.00
7. Tandem roller, Buffalo-Springfield, gas, 5-ton, four-cylinder, power steering, good running condition.....$1875.00
8. Vibrating Screen, Seco Model S, two deck, 4'x10'; complete with electric motor; like new; purchased 1941. .....$1100.00
9. Vibrating screen, triple deck, Simplicity 4'x8', electric motor; ANo.1. .....$1250.00
10. Scraper, two-wheel, rear dump, Continental, 5-yard hydraulic, with pump and controls; ANo.1 condition.$1250.00
11. Asphalt Plant, Barber Green, Model 842, with engine, drier, conveyors, etc. complete.....85% of list
12. Chip Spreader, Buckeye; rebuilt and guaranteed $400.00
13. Patch Roller, Galion 5-7 ton, portable type $1000.00
14. Compressor, stationary, belt driven, Gardner-Denver 420 ft. displacement. .....Bargain

ROY-C-WHAYNE SUPPLY COMPANY
800 W. Main St., Louisville 2, Kentucky
Ph. WAbash 1375

75—Used Steel-Brooks Load Lugger Buckets; 1½ yds. capacity. V shaped bottoms —rounded, with ring hooks.

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CLINE & DOOCHIN
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DRAG SCRAPER

Sauerman Bros. drag scraper equipment with traveling head tower, including motors and controls for storing and reclaiming 200 tons of material per hour.

BREW, WOLTMAN & COMPANY, INC.
50 Church St., New York 7, N. Y.

For Sale

Clark 3 ton Low Lift 11" to 15½".
Platform 25½" x 54".
Reconditioned Motor with a new Carburator and Magneto.
2—16½ x 3¼ and 2—10½ x 5½ Tires.
Wheelbase 54". Serial # T.L. 581.

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Concrete Stone & Block Co.
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MODERN ASPHALT PLANT

1 Ton Cummer Complete with Vibrating Screen, Electrical Timer & Feeder Bin.

IMMEDIATE DELIVERY

L. M. STANHOPE
304 Conestoga Road — Wayne, Penna.

• SELL FOR CASH 75%

Reduce Profit Tax by as much as

LONG ESTABLISHED, REPUTABLE CONCERN WITH SUBSTANTIAL CAPITAL WILL BUY NOW—FOR CASH

Assets, Capital Stock, Family Holdings of

INDUSTRIAL PLANTS, MFG., DIVISIONS, UNITS

We are Principals, and act only in strictest confidence, retaining Personnel wherever possible. Address BOX 1200, 1474 BROADWAY, N. Y. C.

PLANT EQUIPMENT

TYLER HUM-MER SCREEN

Type 31—Two 3'x5' Screen Surfaces complete with generator

22,000 Gal. Tank on 50' Steel Tower

37" Bedford Open Side Planers — 13' and 15' Beds

Insley Guy Derrick
85' Mast — 75' Boom

Webb City Jaw Crusher
12 x 24 — No. 7

INLAND EQUIPMENT CO.
P. O. Box 477 — Nashville, Tennessee

LOCOMOTIVE CRANE AND SPARE BOILER

25 Ton Industrial 42' Boom Mass. Code Boiler, 160# Press., 8 Wheels, Steel Side Frames.

COMPLETELY REBUILT
Immediate shipment

54" ASME Code Crane Boiler
REBUILT
Fits any Crane

HAWKINS & COMPANY
124 So. Michigan Ave., Chicago, Ill.
Phone Har. 0725

LOCOMOTIVES

1—6-Ton Gas Locomotive, 36" Ga., Milwaukee Locomotive Works
1—9-Ton Gas, 36" Ga., Whitcomb
2—25-Ton 0-4-0 Porter Saddle Tank Locos. Oil burners; A. S. M. E. Code, Excel. Cond.
1—30-Ton 0-4-0 Davenport, A.S.M.E. Boiler.
1—50-Ton 0-6-0 Vulcan Locomotive
2—60-Ton Baldwin-Westinghouse Electric Locos. 1500 Volt D.C. New 1927.
1—60-Ton Westinghouse Electric Locomotive, 550 D.C.
1—65-Ton 2-6-0 Mogul Loco. Oil-burning
1—70-Ton 0-6-0 Baldwin Switching Loco. ICC condition.
3—80-Ton 0-6-0 Lima Switching Locos.
3—70-Ton Gas-Electric Locomotive—steel floors T/E 35, 300#. Built in 1925 and 1927; excellent condition.

Other Locomotives, Too

IRON & STEEL PRODUCTS, INC.
40 years' experience
"ANYTHING containing IRON or STEEL"
13490 S. Brainard Ave., Chicago 33, Illinois

FOR SALE

2—D-13000 & D-4600 Caterpillar Diesels
1—DHK Waukesha, 125 HP Power Unit
1—750, 300, 150, 120 & 100 HP Full Diesels
1—100 KVA 220 V. AC Gen. D/C Full Diesel
1—300 HP Full Diesel D/C Gen. Elec. Gen.
1—5 Ton, 60' Span O. E. T. Crane 3-Motor
2—125 HP, 125# P. Scotch Marine Boilers
1—Portable Air Compressor, 5¼ x 5

H. & P. Machinery Co., 6719 Etzel, St. Louis

DEPENDABLE USED MACHINES

Special,—Pioneer pneumatic tired gravel plant, 9x36 jaw and 36x20 roll crushers.

75 ton steel bins
Sirocco No. 60 blower
Clam buckets, all sizes
2 yd. Koppel cars, 36 in.
Belt conveyors and parts

Link Belt ¾ yd. crane
10x20 portable crusher
Byers 1 yd. dragline
P.&H. 1 yd. dragline
Gas engines 35 to 125 HP

Williams No. 6 hammermill
Link Belt bucket loader
42x60 Robins screen
B-E 1¾ yd. gas shovel
36 in. sectional track

3506 W. 51st St. — TRACTOR EQUIPMENT CO. — Chicago 32

SLIPRING MOTORS

HP	Make	Type	Volts	RPM
600	Al. Ch.	ANY	2200	1180
350	G. E.	MT	2300	300
300	G. E.	IM	2300	514
300	G. E.	IM	440	293
200	Howell	rlr. b.	440	600
100	Westg.	vert.	2200	1160
100	G. E.	IM	2200	1800
100	G. E.	IM	2300	600
100	Westg.	HF	440	230
75	Northw.	HW	220	1740
75	Lincoln	IXN	220	900
75	G. E.	MT	2200	900
50	G. E.	MT	2200	1200
50	G. E.	MT	220	900
50	Westg.	HF	440	860
50	Al. Ch.	ARY	220	690
50	G. E.	MT	2200	600
40	Wagner	TBR	440	1725
40	Al. Ch.	ARY	220	1160
35	F. Morse	vert.	220	1800
30	G. E.	MT	440	1150
30	Wagner	BR	440	850
25	G. E.	IM	440	1740
25	Century	SR	416	1170
25	G. E.	MT	2200	570
20	G. E.	MT	220	1710
15	Wesche		220	1200
5	G. E.	vert.	220	820

CHICAGO ELECTRIC CO.
(Use Key)
1329 West Cermak Rd., Chicago 8, Illinois

FOR SALE

2—135 K.W., AC Generators, direct connected to Fairbanks Morse Diesel engines

• • •

MERTES MACHINERY COMPANY
1622—So. 1st St., MILWAUKEE, WIS.

FOR SALE

Modern grinding mill plant for feldspar, talc or lime, well located in New York State. Hardinge equipped. Complete, ready to operate. Will sacrifice to responsible buyer.

• • •

H. C. WILDER
315 Syracuse Building
Syracuse 2, New York

LOCOMOTIVES SHOVELS CRANES CARS

1—42½ ton Porter 0-4-0 saddle tank locomotive, standard gauge, A.S.M.E. boiler, entire new firebox, rebuilt.
1—26 ton American 0-4-0 saddle tank locomotive, standard gauge, A.S.M.E. boiler, thoroughly overhauled.
1—72½ ton Baldwin 0-6-0 separate tender switcher, full time I.I.C. papers, overhauled.
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24" x 54" Superior Crushing Rolls

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1—6 ton Milwaukee, 36" ga., gasoline

1—7 ton Milwaukee, 36" ga., gasoline

1—9 ton Whitcomb, 36" ga., gasoline

1—12 ton Milwaukee, std. ga., gasoline

1—18 ton Plymouth, std. ga., gasoline

1—20 ton Plymouth, std. ga., gasoline

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No. 2 Koehring 3-way comb. crane, dragline & shovel

LOCOMOTIVE CRANES

15 ton Brownhoist, 8 wheel, steam, 60' boom

25 ton Browning, 8 wheel, steam, 50' boom

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25 ton American, 8 wheel, steam, 50' boom

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60,000 gallon Water Tank on 89'9" tower, with 10" riser pipe.

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All capacities — Expertly rebuilt!

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7, 7 cu. yd. Allis Chalmers Speed-Ace (Write for illustrated bulletin)

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1—No. 3 Champion jaw crusher, size 7½x13".
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1—No. 9 New Holland jaw crusher, size 6x9".
1—Sawyer Massey jaw crusher, size 9x18".
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2—20 ton American steel guy derricks, 1—110' mast, 100' boom; 1—100' mast, 90' boom.
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HORIZONTAL:

1—10x8" Weiman-Jaeger No. P-4201, power 50 H.P. AC motor; capacity 2500 GPM @ 35' head.
7—8x6" Worthington, 4 stage, No. 676005W, without power. Capacity 900 GPM @ 875' head.
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1—6x6" Morris, No. 169098, power 100 H.P., 2200-/60/3 slip ring motor. Capacity 1200 GPM @ 240' head. Shut off head 270'.
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Width	Ply	Top-Bottom	Covers
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42"	5	1/8"	1/16"
36"	6	1/8"	1/16"
30"	6	1/8"	1/16"
30"	5	1/8"	1/16"
24"	5	1/8"	1/32"
24"	4	1/8"	1/32"
20"	5	1/8"	1/32"
20"	4	1/8"	1/32"
18"	4	1/8"	1/32"
16"	4	1/8"	1/32"
14"	4	1/16"	1/32"
12"	4	1/16"	1/32"

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HEAVY-DUTY FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18"	6	10"	6	6"	5
16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
12"	5	6"	6	3"	4

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	25 "	7.50
	35 "	10.50
	40 "	12.00
1½"	50 "	15.00
	25 "	10.00
	35 "	14.00
	50 "	20.00

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I.D. Size	Length	per Length	Couplings
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	50 "	10.00	1.50 "
¾"	25 "	6.25	2.50 "
	50 "	12.50	2.50 "
1"	25 "	10.00	3.50 "
	50 "	20.00	3.50 "

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Finishing machines from 10' up to 32 ft.

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Cement Plants
Storage Methods
Operating Costs

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Plant Layout
Design
Construction
Appraisals

WANTED

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Familiar with pipe, block or any special concrete product. Must have at least high school education, be mechanically inclined and have pleasing personality. Age limit 48. Postwar opportunity with large concern branching out into full line of products in various sections of the United States and operating on an incentive profit sharing plan. Past record must stand rigid inspection. Include photograph in reply.

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Locomotive Cranes, 10 to 40 Ton Cap'y. Steam, Gas, Diesel, Elec.
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1—Ingersoll-Rand Imperial, Type XB-2, Duplex Air Compressor, 12"x7½"x12".

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1—10'x90' and others.

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1—P & H 1-yd. Shovel, Gasoline, Reconditioned.
1—Locomotive, 4-wheel, 10-ton, 25' boom, Brown Hoist Co.

CRUSHERS

2—No. 5-6-8 Gates Gyratory Crushers, Style D. Others—various types and sizes.

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KILNS

Various sizes.

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6—5-yd. Koppel 2-way Dump Cars, 36" gauge.

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1—Improved Type No. 22 electric power Loomis Machine Company Clipper Drill, complete with motor.
2—Ingersoll-Rand DCR No. 430 Drills.
2—Denver-Gardner Co. (Turbo-Waugh) No. 37 Drills.
4—Denver-Gardner Co. (Denver-Waugh) No. 95 Drills.

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2—Bailey Pulverized Coal Feeders, Type No. 2, complete with steel hoppers, 8½" ft. dia. x 12 ft. cone bottom. ¼

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1—Homestead (Carnegie-Illinois Steel) Standard Track Scale, 46'-100 ton capacity. Complete.

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Model K. AC Tractor with hydraulic Snow Plow
Model 20 Caterpillar Tractor
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1 cu. yd. Northwest Combination Shovel and Crane, gas, No. 105
1½ cu. yd. Bucyrus Shovel, model 37-B, gas.
3 cu. yd. Wiley Whirley Crane
⅛ cu. yd. P & H Shovel, gas.
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8x24 Cedar Rapids Portable Crushing Plant
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10x24 Jaw Crusher, Austin Western
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Gasoline Power Units, 45 to 150 HP
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9, Dump, Koppel Automatic, 30-Yd., 50-Ton; with Aprons
10, Dump, Major, Automatic, 30-Yd., 50-Ton; Lift doors
10, Dump, Western, Automatic, 30-Yd., 50-Ton; Lift doors
1, Dump, Koppel, Automatic, 20-Yd., 40-Ton, Drop-side Door
4, Dump, Western, 20-Yd., 40 & 50-Ton
18, Dump, K & J Automatic, 16-Yd., 40-Ton
20, Flat, 40-Ft., 40 & 50-Ton
35, Gondola, Composite, 36-Ft., 40 & 50-Ton
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1—OK Single Drum Hoist, 35 H.P. Waukesha Engine
1—1500 Watt Kohler Portable Gasoline Lighting Plant
1—2500 Watt Universal Portable gas engine lighting plant
2—¾ cu. yd. Owen Type K Clamshell buckets
2—1 cu. yd. Owen Type M Clamshell buckets
2—9" x 16" Cedar Rapids Jaw Crushers
1—8" x 24" Universal Jaw Crusher, portable with bucket elevator
1—10" x 20" Allis Chalmers Blake type Jaw crusher
1—Shovel front for 10-B Bucyrus Erie
1—Ingersoll-Rand 160 compressor, 2 stage, Waukesha engine, on four (4) pneumatic tires
1—5 Ton, 3 Wheel Good Roads Gasoline Roller
1—Model 42B Barber-Greene bucket loader
1—2 ½ cu. yd. Hayward Class G. clamshell bucket
1—4 cu. yd. Hayward Class G Clamshell bucket
1—2 drum Sauerman Hoist with Hercules Gas Engine

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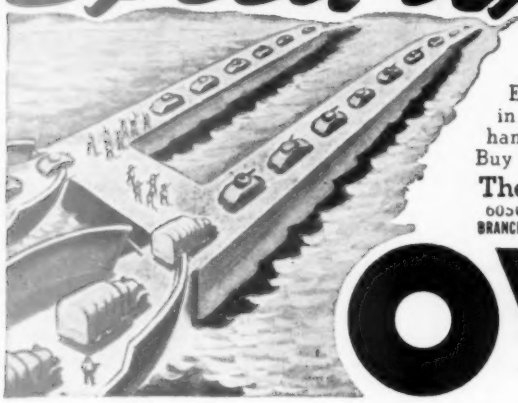

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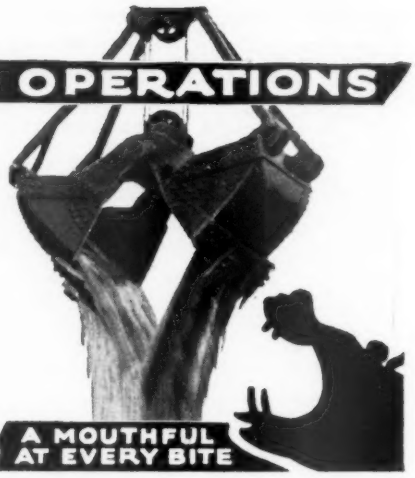

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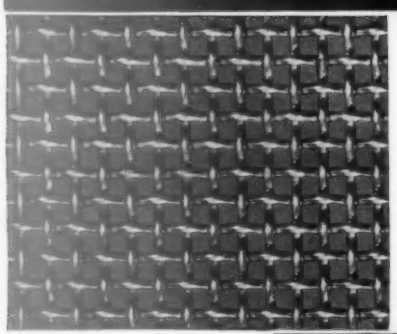

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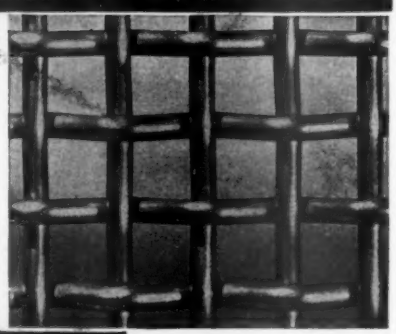

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